



**GE Healthcare**

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# **Technical Publication**

**Direction 5429555-PI-1EN  
Revision 6**

**GE Healthcare  
Brivo XR575 Pre-Installation Manual  
(with CE mark)**





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# ***LEGAL NOTES***

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# Important Precautions

## LANGUAGE

ПРЕДУПРЕЖ ДЕНИЕ (BG)	<p>Това упътване за работа е налично само на английски език.</p> <ul style="list-style-type: none"><li>Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.</li><li>Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.</li><li>Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациента в резултат на токов удар, механична или друга опасност.</li></ul>
警告 (ZH-CN)	<p>本维修手册仅提供英文版本。</p> <ul style="list-style-type: none"><li>如果客户的维修服务人员需要非英文版本，则客户需自行提供翻译服务。</li><li>未详细阅读和完全理解本维修手册之前，不得进行维修。</li><li>忽略本警告可能对维修服务人员、操作人员或患者造成电击、机械伤害或其他形式的伤害。</li></ul>
警告 (ZH-HK)	<p>本服務手冊僅提供英文版本。</p> <ul style="list-style-type: none"><li>倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。</li><li>除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。</li><li>不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他危險。</li></ul>
警告 (ZH-TW)	<p>本維修手冊僅有英文版。</p> <ul style="list-style-type: none"><li>若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。</li><li>請勿試圖維修本設備，除非您已查閱並瞭解本維修手冊。</li><li>若未留意本警告，可能導致維修廠商、操作員或病患因觸電、機械或其他危險而受傷。</li></ul>
UPOZOR- ENJE (HR)	<p>Ovaj servisni priručnik dostupan je na engleskom jeziku.</p> <ul style="list-style-type: none"><li>Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod.</li><li>Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik.</li><li>Zanemarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.</li></ul>

VÝSTRAHA (CS)	<p>Tento provozní návod existuje pouze v anglickém jazyce.</p> <ul style="list-style-type: none"><li>• V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka.</li><li>• Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah.</li><li>• V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.</li></ul>
ADVARSEL (DA)	<p>Denne servicemanual findes kun på engelsk.</p> <ul style="list-style-type: none"><li>• Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse.</li><li>• Forsøg ikke at servicere udstyret uden at læse og forstå denne servicemanual.</li><li>• Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk stød, mekanisk eller anden fare for teknikeren, operatøren eller patienten.</li></ul>
WAAR- SCHUWING (NL)	<p>Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar.</p> <ul style="list-style-type: none"><li>• Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan.</li><li>• Probeer de apparatuur niet te onderhouden alvorens deze onderhoudshandleiding werd geraadpleegd en begrepen is.</li><li>• Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de operator of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.</li></ul>
WARNING (EN)	<p>This service manual is available in English only.</p> <ul style="list-style-type: none"><li>• If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.</li><li>• Do not attempt to service the equipment unless this service manual has been consulted and is understood.</li><li>• Failure to heed this warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.</li></ul>
HOIATUS (ET)	<p>See teenindusjuhend on saadaval ainult inglise keeles.</p> <ul style="list-style-type: none"><li>• Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest.</li><li>• Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist.</li><li>• Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.</li></ul>

<p>VAROITUS (FI)</p>	<p>Tämä huolto-ohje on saatavilla vain englanniksi.</p> <ul style="list-style-type: none"> <li>• Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla.</li> <li>• Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen.</li> <li>• Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.</li> </ul>
<p>ATTENTION (FR)</p>	<p>Ce manuel d'installation et de maintenance est disponible uniquement en anglais.</p> <ul style="list-style-type: none"> <li>• Si le technicien d'un client a besoin de ce manuel dans une langue autre que l'anglais, il incombe au client de le faire traduire.</li> <li>• Ne pas tenter d'intervenir sur les équipements tant que ce manuel d'installation et de maintenance n'a pas été consulté et compris.</li> <li>• Le non-respect de cet avertissement peut entraîner chez le technicien, l'opérateur ou le patient des blessures dues à des dangers électriques, mécaniques ou autres.</li> </ul>
<p>WARNUNG (DE)</p>	<p>Diese Serviceanleitung existiert nur in englischer Sprache.</p> <ul style="list-style-type: none"> <li>• Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen.</li> <li>• Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben.</li> <li>• Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendiensttechnikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.</li> </ul>
<p>ΠΡΟΕΙΔΟΠΟΙΗΣΗ (EL)</p>	<p>Το παρόν εγχειρίδιο σέρβις διατίθεται στα αγγλικά μόνο.</p> <ul style="list-style-type: none"> <li>• Εάν το άτομο παροχής σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει υπηρεσίες μετάφρασης.</li> <li>• Μηνεπιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό εκτός εάν έχετε συμβουλευτεί και έχετε κατανοήσει το παρόν εγχειρίδιο σέρβις.</li> <li>• Εάν δεν λάβετε υπόψη την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στο άτομο παροχής σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.</li> </ul>
<p>FIGYELMEZTETÉS (HU)</p>	<p>Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.</p> <ul style="list-style-type: none"> <li>• Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészíttetése.</li> <li>• Ne próbálja elkezdni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték.</li> <li>• Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.</li> </ul>

<p>ADVÖRUN (IS)</p>	<p>Þessi þjónustuhandbók er aðeins fáanleg á ensku.</p> <ul style="list-style-type: none"> <li>• Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálaþjónustu.</li> <li>• Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin.</li> <li>• Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflösti, vélrænu eða öðrum áhættum.</li> </ul>
<p>AVVERTENZA (IT)</p>	<p>Il presente manuale di manutenzione è disponibile soltanto in lingua inglese.</p> <ul style="list-style-type: none"> <li>• Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.</li> <li>• Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto.</li> <li>• Il mancato rispetto della presente avvertenza potrebbe causare lesioni all'addetto alla manutenzione, all'operatore o ai pazienti provocate da scosse elettriche, urti meccanici o altri rischi.</li> </ul>
<p>警告 (JA)</p>	<p>このサービスマニュアルには英語版しかありません。</p> <ul style="list-style-type: none"> <li>• サービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。</li> <li>• このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。</li> <li>• この警告に従わない場合、サービスを担当される方、操作員あるいは患者さんが、感電や機械的又はその他の危険により負傷する可能性があります。</li> </ul>
<p>경고 (KO)</p>	<p>본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다.</p> <ul style="list-style-type: none"> <li>• 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다.</li> <li>• 본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오.</li> <li>• 본 경고 사항에 유의하지 않으면 전기 쇼크, 기계적 위험, 또는 기타 위험으로 인해 서비스 제공자, 사용자 또는 환자에게 부상을 입힐 수 있습니다.</li> </ul>
<p>BRĪDINĀJUMS (LV)</p>	<p>Šī apkopes rokasgrāmata ir pieejama tikai angļu valodā.</p> <ul style="list-style-type: none"> <li>• Ja klienta apkopes sniedzējam nepieciešama informācija citā valodā, klienta pienākums ir nodrošināt tulkojumu.</li> <li>• Neveiciet aprīkojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas.</li> <li>• Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas trieciena, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.</li> </ul>

ĮSPĖJIMAS (LT)	<p>Šis eksploataavimo vadovas yra tik anglų kalba.</p> <ul style="list-style-type: none"><li>• Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, suteikti vertimo paslaugas privalo klientas.</li><li>• Nemėginkite atlikti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio eksploataavimo vadovo.</li><li>• Jei nepaisysite šio įspėjimo, galimi paslaugų tiekėjo, operatoriaus ar paciento sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų.</li></ul>
ADVARSEL (NO)	<p>Denne servicehåndboken finnes bare på engelsk.</p> <ul style="list-style-type: none"><li>• Hvis kundens serviceleverandør har bruk for et annet språk, er det kundens ansvar å sørge for oversettelse.</li><li>• Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått.</li><li>• Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.</li></ul>
OSTRZEŻE- NIE (PL)	<p>Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.</p> <ul style="list-style-type: none"><li>• Jeśli serwisant klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta.</li><li>• Nie próbować serwisować urządzenia bez zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia go.</li><li>• Niezastosowanie się do tego ostrzeżenia może doprowadzić do obrażeń serwisanta, operatora lub pacjenta w wyniku porażenia prądem elektrycznym, zagrożenia mechanicznego bądź innego.</li></ul>
ATENÇÃO (PT-BR)	<p>Este manual de assistência técnica encontra-se disponível unicamente em inglês.</p> <ul style="list-style-type: none"><li>• Se outro serviço de assistência técnica solicitar a tradução deste manual, caberá ao cliente fornecer os serviços de tradução.</li><li>• Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.</li><li>• A não observância deste aviso pode ocasionar ferimentos no técnico, operador ou paciente decorrentes de choques elétricos, mecânicos ou outros.</li></ul>
ATENÇÃO (PT-PT)	<p>Este manual de assistência técnica só se encontra disponível em inglês.</p> <ul style="list-style-type: none"><li>• Se qualquer outro serviço de assistência técnica solicitar este manual noutra língua, é da responsabilidade do cliente fornecer os serviços de tradução.</li><li>• Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.</li><li>• O não cumprimento deste aviso pode colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros.</li></ul>

<p>ATENȚIE (RO)</p>	<p>Acest manual de service este disponibil doar în limba engleză.</p> <ul style="list-style-type: none"> <li>• Dacă un furnizor de servicii pentru clienți necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere.</li> <li>• Nu încercați să reparați echipamentul decât ulterior consultării și înțelegerii acestui manual de service.</li> <li>• Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.</li> </ul>
<p>ОСТОРОЖН О! (RU)</p>	<p>Данное руководство по техническому обслуживанию представлено только на английском языке.</p> <ul style="list-style-type: none"> <li>• Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод.</li> <li>• Перед техническим обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения.</li> <li>• Несоблюдение требований данного предупреждения может привести к тому, что специалист по техобслуживанию, оператор или пациент получит удар электрическим током, механическую травму или другое повреждение.</li> </ul>
<p>UPOZOR- ENJE (SR)</p>	<p>Ovo servisno uputstvo je dostupno samo na engleskom jeziku.</p> <ul style="list-style-type: none"> <li>• Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge.</li> <li>• Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo.</li> <li>• Zanemarivanje ovog upozorenja može dovesti do povređivanja servisera, rukovaoca ili pacijenta usled strujnog udara ili mehaničkih i drugih opasnosti.</li> </ul>
<p>UPOZORNE- NIE (SK)</p>	<p>Tento návod na obsluhu je k dispozícii len v angličtine.</p> <ul style="list-style-type: none"> <li>• Ak zákazníkovi poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka.</li> <li>• Nepokúšajte sa o obsluhu zariadenia, kým si neprečítate návod na obsluhu a neporozumiete mu.</li> <li>• Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie.</li> </ul>
<p>ATENCION (ES)</p>	<p>Este manual de servicio sólo existe en inglés.</p> <ul style="list-style-type: none"> <li>• Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual.</li> <li>• No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio.</li> <li>• La no observancia del presente aviso puede dar lugar a que el proveedor de servicios, el operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.</li> </ul>

VARNING (SV)	<p>Den här servicehandboken finns bara tillgänglig på engelska.</p> <ul style="list-style-type: none"><li>• Om en kunds servicetekniker har behov av ett annat språk än engelska, ansvarar kunden för att tillhandahålla översättningstjänster.</li><li>• Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken.</li><li>• Om du inte tar hänsyn till den här varningen kan det resultera i skador på serviceteknikern, operatören eller patienten till följd av elektriska stötar, mekaniska faror eller andra faror.</li></ul>
OPOZORILO (SL)	<p>Ta servisni priročnik je na voljo samo v angleškem jeziku.</p> <ul style="list-style-type: none"><li>• Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod.</li><li>• Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli.</li><li>• Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.</li></ul>
DİKKAT (TR)	<p>Bu servis kılavuzunun sadece ingilizcesi mevcuttur.</p> <ul style="list-style-type: none"><li>• Eğer müşteri teknisyeni bu kılavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer.</li><li>• Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz.</li><li>• Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.</li></ul>
ЗАСТЕРЕЖЕ ННЯ (UK)	<p>Даний посібник з експлуатації доступний тільки англійською мовою.</p> <ul style="list-style-type: none"><li>• Якщо постачальник послуг клієнта спілкується іноземною мовою, тоді клієнт зобов'язаний забезпечити переклад.</li><li>• Заборонено проводити огляд обладнання без попереднього звертання до даного посібника з експлуатації і розуміння інформації, поданої у ньому.</li><li>• Недотримання цього застереження може завдати шкоди здоров'ю постачальника послуг, оператора або пацієнта через ураження електричним струмом, механічну травму або інше ушкодження.</li></ul>

## DAMAGE IN TRANSPORTATION

All packages should be closely examined at time of delivery. If damage is apparent, write "Damage In Shipment" on ALL copies of the freight or express bill BEFORE delivery is accepted or "signed for" by a GE representative or hospital receiving agent. Whether noted or concealed, damage MUST be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period. Call GEHC Global Parts 1-800-548-3366 and select option 8, immediately after damage is found. At this time be ready to supply name of carrier, delivery date, consignee name, freight or express bill number, item damaged and extent of damage.

Complete instructions regarding claim procedure are found in Section S of the Policy And Procedures Bulletins.

14 July 1993

## **CERTIFIED ELECTRICAL CONTRACTOR STATEMENT**

All electrical Installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. In addition, electrical feeds into the Power Distribution Unit shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE Healthcare personnel. The products involved (and the accompanying electrical installations) are highly sophisticated, and special engineering competence is required. In performing all electrical work on these products, GE will use its own specially trained field engineers. All of GE's electrical work on these products will comply with the requirements of the applicable electrical codes.

The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE's field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.

## **IMPORTANT...X-RAY PROTECTION**

X-ray equipment, if not properly used, may cause injury. Accordingly, the instructions herein contained should be thoroughly read and understood by everyone who will use the equipment before you attempt to place this equipment in operation. The General Electric Company, Healthcare Group, will be glad to assist and cooperate in placing this equipment in use.

Although this apparatus incorporates a high degree of protection against x-radiation other than the useful beam, no practical design of equipment can provide complete protection. Nor can any practical design compel the operator to take adequate precautions to prevent the possibility of any persons carelessly exposing themselves or others to radiation.

It is important that anyone having anything to do with x-radiation be properly trained and fully acquainted with the recommendations of the National Council on Radiation Protection and Measurements as published in NCRP Reports available from NCRP Publications, 7910 Woodmont Avenue, Room 1016, Bethesda, Maryland 20814, and of the International Commission on Radiation Protection, and of any other local authorities, and take adequate steps to protect against injury.

The equipment is sold with the understanding that the General Electric Company, Healthcare Group, its agents, and representatives have no responsibility for injury or damage which may result from improper use of the equipment.

Various protective materials and devices are available. It is urged that such materials or devices be used.

## **OMISSIONS & ERRORS**

Customers, please contact your GE Sales or Service representatives.

GE personnel, please use the GE Healthcare complaint handling process to report all omissions, errors, and defects in this publication.

---

# Preface

## Publication Conventions

---

Standardized conventions for representing information is a uniform way of communicating information to a reader in a consistent manner. Conventions are used so that the reader can easily recognize the actions or decisions that must be made. There are a number of character and paragraph styles used in this publication to accomplish this task. Please become familiar with them before proceeding forward.

It is important that you read and understand hazard statements, and not just ignore them.

## Section 1.0

### Safety & Hazard Information

Proper product safety labeling allows a person to safely use or service a product. The format and style for safety communications reflected in this publication represents the harmonization of IEC/ISO 3864 and ANSI Z535 standards.

Within this publication, different paragraph and character styles are used to indicate potential hazards. Paragraph prefixes, such as hazard, caution, danger and warning, are used to identify important safety information. Text (Hazard) styles are applied to the paragraph contents that are applicable to each specific safety statement.

#### 1.1 Hazard Messages

Any action that will, or could potentially cause personal injury will be preceded by the safety alert symbol and an appropriate signal word. The safety alert symbol is the triangle with an exclamation mark within it. It is always used next to the signal word to indicate the severity of the hazard. Together, they are used to indicate a hazard exists.

Signal words describe the severity of possible human injuries that may be encountered. The alert symbol and signal word are placed immediately before any paragraph they affect. Safety information includes:

- 1.) Signal Word - The seriousness level of the hazard.
- 2.) Symbol or Pictorial - The consequence of interaction with the hazard.
- 3.) Word Message:
  - a.) The nature of the hazard (i.e. the type of hazard).
  - b.) How to avoid the hazard.

The safety alert symbol is not used when an action can only cause equipment damage.

#### 1.2 Text Format of Signal Words

**DANGER - INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY. THIS SIGNAL WORD IS TO BE LIMITED TO THE MOST EXTREME SITUATIONS.**

**WARNING - INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.**




































**Caution** - Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE** - Indicates information or a company policy that relates directly or indirectly to the safety of personnel or protection of property. This signal word is associated directly with a hazard or hazardous situation and is used in place of 'DANGER,' 'WARNING,' or 'CAUTION.' It can include:

- Destruction of a disk drive
- Potential for internal mechanical damage, such as to a X-ray tube

### 1.3 Symbols and Pictorials Used

The following Symbols and Pictorials may be used in this publication. These graphical icons (symbols) may be used to make you aware of specific types of hazards that could possibly cause harm.

NOTICE	CAUTION	WARNING	DANGER	
 keep_up	 magnetic	 biohazard	 compressgas	 ppe-hearing
 fragile	 impact	 corrosive	 heavyobject	 ppe-2people
 static_elec	 heat	 general	 laser	 ppe-respiratory
 keep_dry	 pinch	 radiation	 poisongas	 ppe-loto
 general	 explosive	 electrical	 flammable	 ppe-eye
 torque	 crush/mechanical	 tipping	 Read Manual	 ppe-gloves
 ce	 instuction	 poisonmatl	 entanglement	 instuction

---

## Section 2.0 Publication Conventions

### 2.1 General Paragraph and Character Styles

Prefixes are used to highlight important non-safety related information. Paragraph prefixes (such as Purpose, Example, Comment or Note) are used to identify important but non-safety related information. Text styles are also applied to text within each paragraph modified by the specific prefix.

#### **EXAMPLES OF PREFIXES USED FOR GENERAL INFORMATION:**

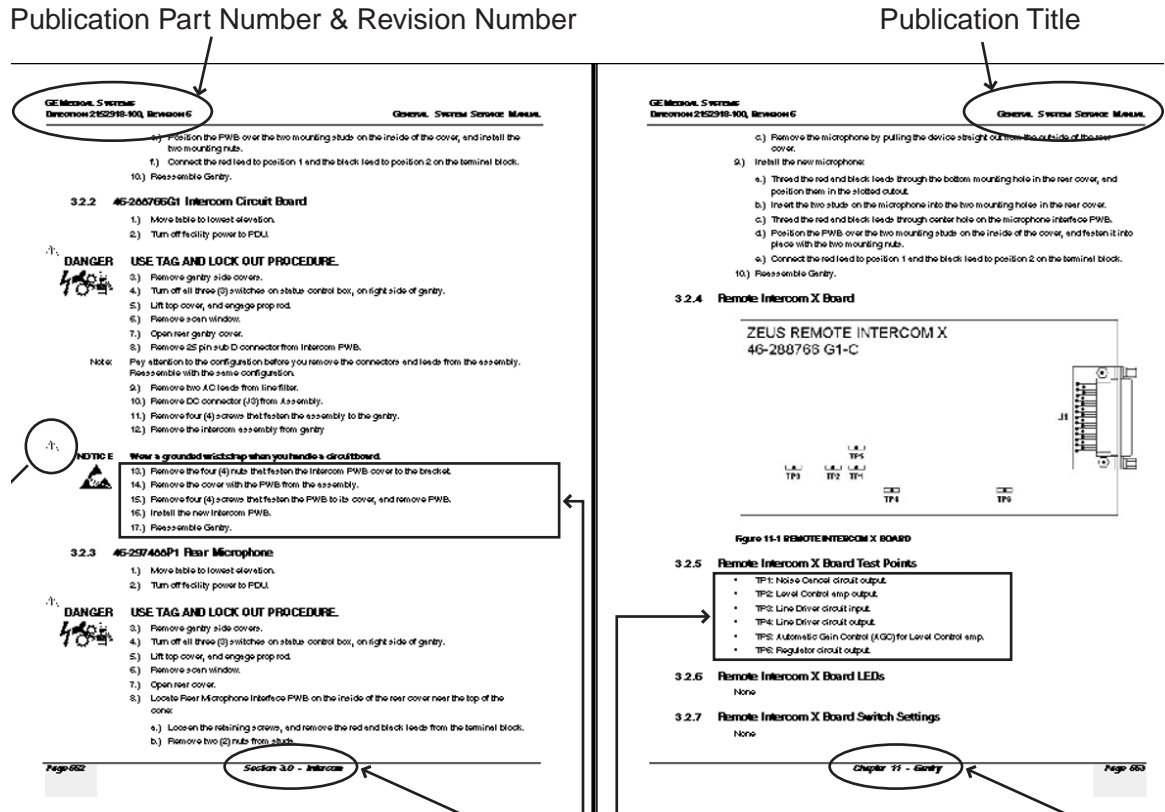
**Purpose:** Introduces and provides meaning as to the information contained within the chapter, section or subsection (such as used at the beginning this chapter, for example).

**Note:** Conveys information that should be considered important to the reader.

**Example:** Used to make the reader aware that the paragraph(s) that follow are examples of information possibly stated previously.

**Comment:** *Represents “additional” information that may or may not be relevant to your situation.*

## 2.2 Page Layout



The current section and its title are always shown in the footer of the left (even) page.

An exclamation point in a triangle is used to indicate important information to the user.

Paragraphs preceded by **Alphanumeric** characters (e.g. numbers) contain information that must be followed in a **specific order**.

The current chapter and its title are always shown in the footer of the right (odd) page.

Paragraphs preceded by a **symbol** (e.g. bullets) contain information that has **no specific order**.

**Figure 1 Component Identification**

Headers and footers in this publication are designed to allow you to quickly identify your location. The document part number and revision number appear in every header on every page. Odd numbered page footers indicate the current chapter, its title and current page number. Even numbered page footers show the current section and its title, as well as the current page number.

## 2.3 Computer Screen Output/Input Text Character Styles

Within this publication, mono-spaced character styles (fonts) are used to indicate computer text that is either screen input or output. Mono-spaced fonts, such as courier, are used to indicate text direction. When you type at your keyboard, you are generating computer input. Occasionally you will see the math operator “greater-than” and “less-than” symbols used to indicate the start and finish of variable output. When reading text generated by the computer, you are reading it as computer generated output. In addition to direction, characters are italicized (e.g. *italics*) to indicate information specific to your system or site.

Example: This paragraph's font represents computer generated screen "fixed" output.  
Fixed Output Its output is fixed from the sense that it does not vary from application to application. It is the most commonly used style used to indicate filenames, paths and text that do not change from system to system. The character style used is a fixed width such as courier.

Example: *This paragraph's font represents computer screen output that is "variable". It is used to represent output that varies from application to application or system to system. Variable output is sometimes found placed between greater-than and less-than operators for clarification. For example: <variable\_ouput> or <3.45.120.3>. In both cases, the < and > operators are not part of the actual input.*  
Variable Output

Example: **This paragraph's font represents fixed input. It is computer input that is typed-in via the keyboard. Typed input that does not vary from application to application or system to system. Fixed text the user is required to supply as input. For example: cd /usr/3p**  
Fixed Input

Example: *This paragraph's font represents computer input that can vary from application to application or system to system. With variable text, the user is required to supply system dependent input or information. Variable input sometimes is placed between greater-than and less-than operators. For example: <variable\_input>. In these cases, the (<>) operators would be dropped prior to input. For example: ypcat hosts | grep <3.45.120.3> would be typed into the computer as*  
Variable Input  

```
ypcat hosts | grep 3.45.120.3
```

*without the greater-than and less-than operators.*

## 2.4 Buttons, Switches and Keyboard Inputs (Hard & Soft Keys)

Different character styles are used to indicate actions requiring the reader to press either a hard or soft button, switch or key. Physical hardware, such as buttons and switches, are called hard keys because they are hard wired or mechanical in nature. A keyboard or on/off switch would be a hard key. Software or computer generated buttons are called soft keys because they are software generated. Software driven menu buttons are an example of such keys. Soft and hard keys are represented differently in this publication.

Example: A power switch **ON/OFF** or a keyboard key like **ENTER** is indicated by applying a character style that uses both over and under-lined bold text. This is a hard key.  
Hard Keys

Example: Whereas the computer MENU button that you would click with your mouse or touch with your hand uses over and under-lined regular text. This is a soft key.  
Soft Keys

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# Chapter 1 - Introduction

---

## Section 1.0 Objective and Scope of this Manual

This document is intended as a guide and informational resource for planning and properly preparing a location for the installation of a system.

## Section 2.0 Avoiding Unnecessary Expenses and Delays

To avoid unnecessary expenses and delays, use the “Pre-Installation” checklist located in [Chapter 8](#) to determine if you are ready for the installation to begin. Once you believe that your room/location is ready for installation to begin, complete the “Pre-Installation” checklist. The checklist is an important tool that helps verify that nothing has been missed. The checklist summarizes the preparations and allows you to record a permanent record of the activities that have taken place.

## Section 3.0 An Overview of the Pre-Installation Process

Pre-installation is a co-operative effort between the customer/purchaser and GE Healthcare (GEHC). Complete the checklists contained in this manual. They are an important part of the pre-installation process. The checklists summarize the required preparations and verify the completion of the pre-installation procedures.

[Figure 1-1](#) outlines the information in this document and its place in the pre-installation process.

- Chapter 3 -- Room Requirements
- Chapter 6 -- Product Characteristics
- Chapter 7 -- Room Layout
- Chapter 4 -- Planning Electrical Connections
- Chapter 5 -- System Facility Power & Grounds
  
- Chapter 8 -- Planning Aids

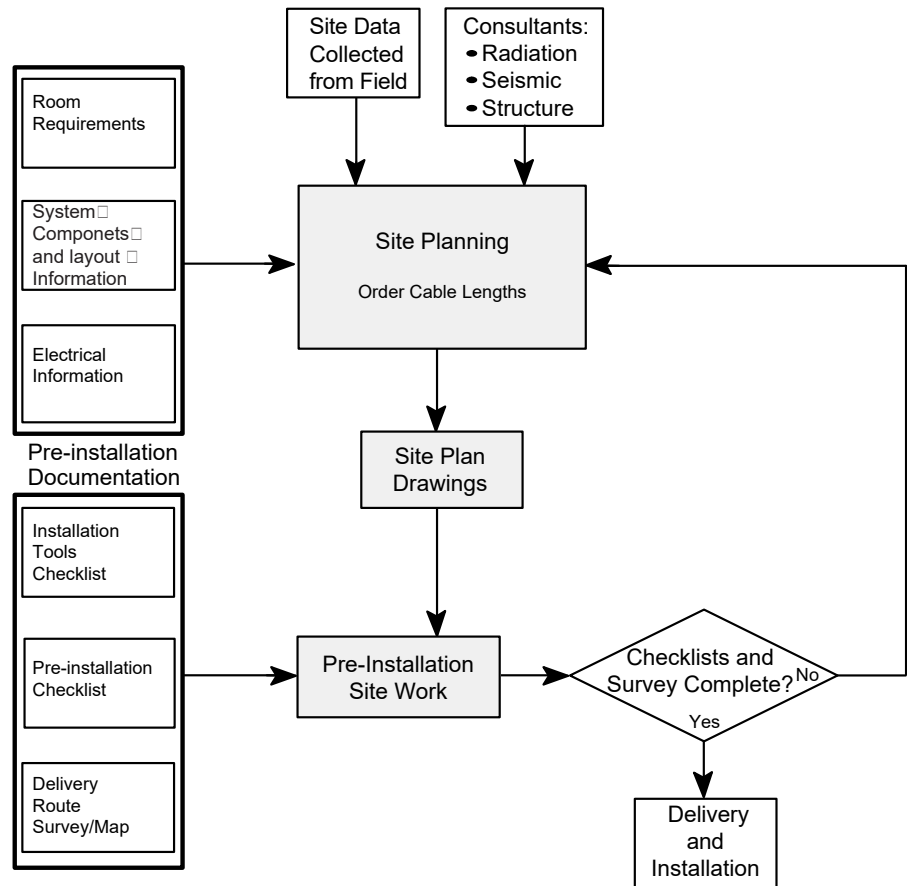


Figure 1-1 Pre-Installation Overtable

## Section 4.0 Responsibility of Purchaser/Customer

To ensure that the installation of the system meets the purchaser or Customer expectations, it is important to determine who will take responsibility for various items in the course of the system installation process. To aid you in determining these responsibilities, review the following checklists with the customer and assign responsibilities as appropriate:

- Tools and Equipment Checklist (see [page 74](#))
- Pre-Installation Checklist (see [page 85](#))

## Section 5.0 Contract Changes

Be sure to inform the customer that the cost of any alterations or modifications not specified in the sales contract are the responsibility of the customer.

## Section 6.0 Responsibilities of the Purchaser

The purchaser is responsible for completion of “Pre-Installation”. This includes the procurement and installation of all required materials and services to get the room ready for installation of the product. This responsibility includes providing:

- A clean and safe work environment for installation of the product (finished floor, ceiling, walls, and proper room lighting).
- A location suitable for the installation of the product. See [Chapter 3 - - Room Requirements](#).
  - Suitable support structures in the floor, walls, or ceiling necessary for the mounting of the product and/or its components.
  - Installation of conduit, ducts and/or raceways necessary to route cables safely. See [Chapter 5 - - System Facility Power & Grounds](#) and [Chapter 6 - - Product Characteristics](#)
  - Electrical power and grounds of specified quality and reliability. See [Chapter 5 - - System Facility Power & Grounds](#).
    - \* Electrical power of the required voltage, including an emergency-off safety switch in the room. Power and ground cables to the PDU (The power cable also can be ordered and the part number is S39222KP).
    - \* Properly installed and sized junction boxes, including covers and fittings at locations required and called out in architectural drawings.
- A location suitable for operation of the product. See [Chapter 7 - - Room Layout](#).
- Installation of non-electric services.

## Section 7.0 What You Will Receive (System Components)

The system may consist of the following main components.

Figure 1-2 Brivo XR515 system configuration(See SM for Brivo XR575)



Item	Component Name	Part Number
1	U-Arm	5420597 for GUA575-P
2	Collimator XS-1D	5429399
3	Detector	5436666
4	Tube	5331186
5	Console	5429246
6	Cabinet (PDU and Generator)	5429116
7	Workstation	5810000-A or 8770000-11
8	Monitor	5498484/5169069-9
9	Stretcher table	5428952/5428953/ GST-1/GST-2

Table 1-1 Brivo XR515 System Component Identification

# ***Chapter 2 - Special Construction***

---

## **Section 1.0 Radiation Protection**

Because X-ray equipment produces radiation, special precautions may need to be taken or special site modifications may be required. The General Electric Company does not make recommendations regarding radiation protection. It is the purchasers responsibility to consult a radiation physicist for advice on radiation protection in X-ray rooms.



# Chapter 3 - Room Requirements

---

## Section 1.0 Environmental Requirements

### 1.1 Relative Humidity and Temperature

#### Transportation and Storage Conditions

- Environment temperature: -20°~70°C (-4°F~158°F)( The environment temperature of digital detector and monitor: ( +0°C ~ +50°C) (32°F~122°F)
- Relative humidity: 10 ~ 90%

#### In-Use Conditions

- Environment temperature: 10° ~ 35°C (50°F~95°F)
- Relative humidity: 30 ~ 80%

#### Limits for rates of change:

In-Use

< 10 °C/ hour (<50 °F/ hour)

< 30% / hour

Storage

< 20 °C / hour (<68 °F/ hour)

< 30% / hour

Note: STORAGE values only refer to equipment that is still in shipping containers. If the equipment is partially or completely installed, refer to IN-USE values.

### 1.2 Altitude and Atmospheric Pressure

#### Transportation and Storage Conditions:

Atmospheric pressure: 700 ~ 1060 hPa

#### In-use Conditions :

Atmospheric pressure: 700 ~ 1060 hPa

#### Limits for rates of change:

In-Use

< 1.8 hPA / hour

Storage

< 76 hPA / hour

Note: STORAGE values only refer to equipment that is still in shipping containers. If the equipment is partially or completely installed, refer to IN-USE values.

### 1.3 Heat Output

PRODUCT OR COMPONENT	HEAT OUTPUT MAX	HEAT OUTPUT Idle MAX
Workstation	220 W	120 W (409 BTU/h)
LCD Monitor-if applicable	55 W	5 W (17 BTU/h)
LED Monitor-if applicable	28 W	< 0.5 W (1.7 BTU/h)
U Arm	Brivo XR515:200W Brivo XR575:400W	Brivo XR515:50W Brivo XR575:150W
Generator	3100W	1500W
<b>Total System Output</b>	Brivo XR515:3575W Brivo XR575:3775W	Brivo XR515:1675W Brivo XR575:1775W

Table 3-1 Heat Outputs by Component

### 1.4 Acoustic Output

COMPONENT	SOUND OUTPUT (dBA)	
	IN-USE (measured 1m from any point in system)	STAND-BY (measured 1m from any point in system)
System	< 60	< 55

Table 3-2 Acoustic Output

### 1.5 Light Specification

The monitor screen is adjusted for an optimum ambient light level of 50 lux.

### 1.6 Radiation Protection

Because X-ray equipment produces radiation, special precautions may need to be taken or special site modifications may be required. The General Electric Company does not make recommendations regarding radiation protection. It is the purchasers responsibility to consult a radiation physicist for advice on radiation protection in X-ray rooms.

## Section 2.0 Structural Requirements

### 2.1 Door Size And Ceiling Height Requirements

Minimum door sizes also apply to hallway and elevator. [Chapter 6 - - Product Characteristics](#), for additional details.

- The U-Arm and Column component is the biggest component in the system. The minimum door height must be 190 cm and door width must be 76 cm to take delivery and install system based on a 240 cm (8 ft.) corridor.
- The minimum length, width and depth of the elevator measured to be 150\*160\*220cm.

Ceiling Height:

- For full function and serviceability require minimums ceiling height 3200mm.
- For full serviceability require minimums ceiling height 2700mm, must set the ceiling height in SUIF configuration and higher than 2700mm function will not be used.

Figure 3-1 Dimensions of Brivo XR575 U-Arm

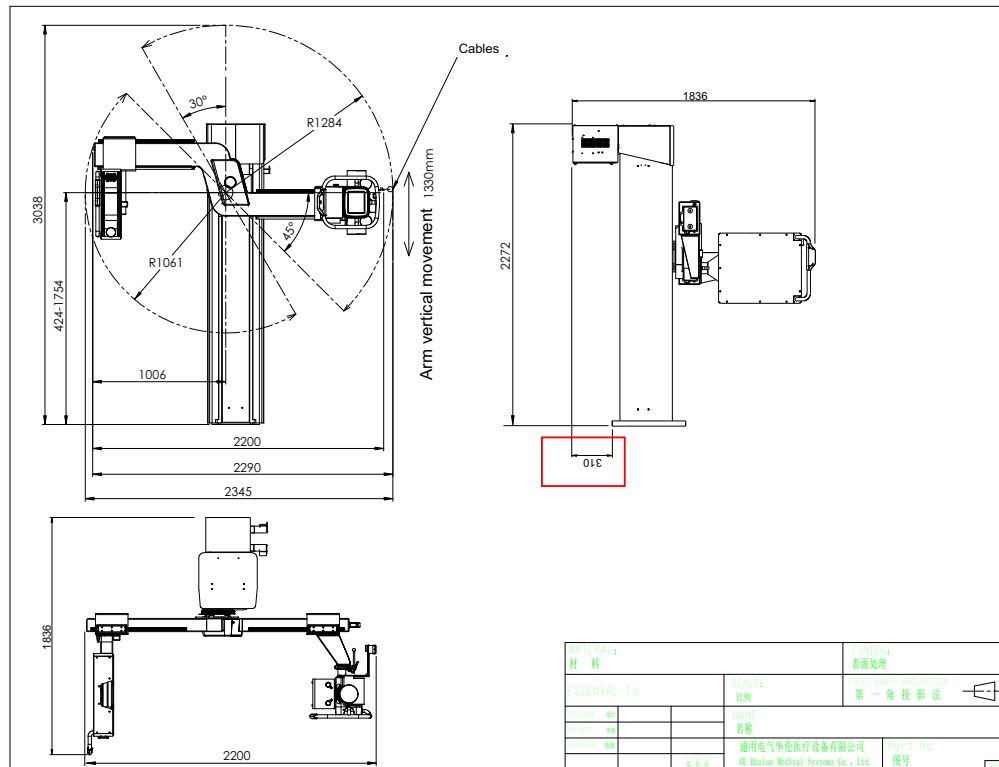
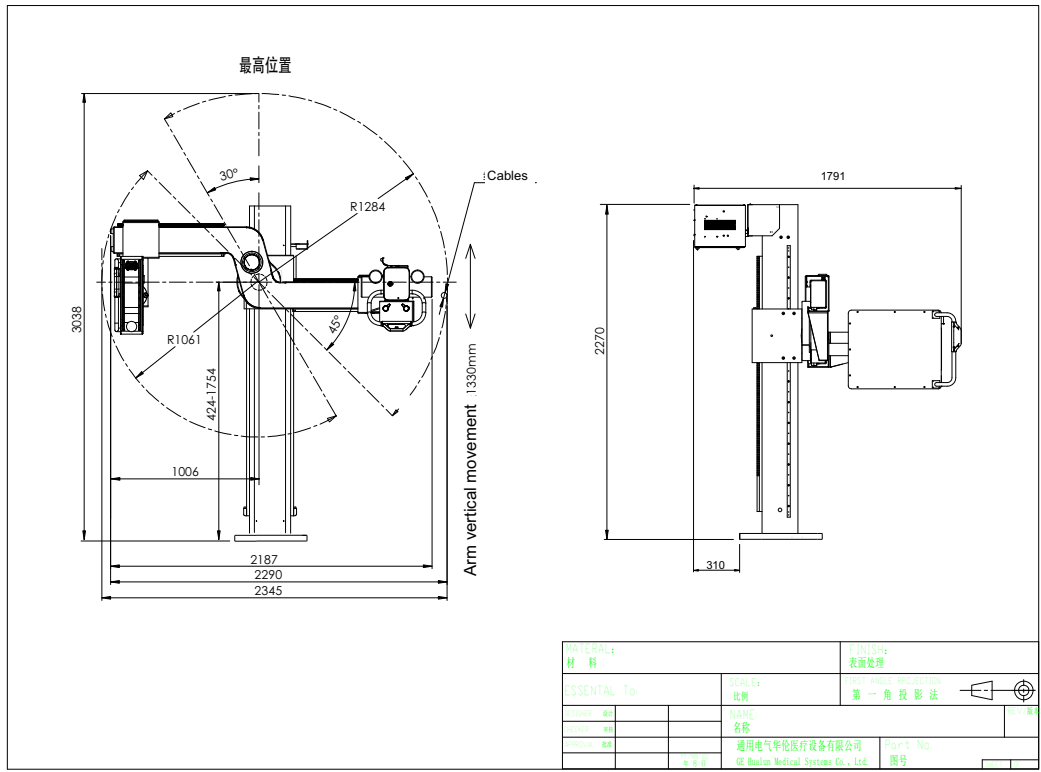


Figure 6-2 Brivo XR575 System Views

Figure 3-2 Dimensions of Brivo XR515 U-Arm

Figure 6-3 Brivo XR515 System Views



**NOTICE**

To remove the system PDU and U-Arm from their respective crates, it is necessary to first assemble the Dolly to each one of them. Keep in mind that when the Dolly is going to be assembled to the Positioner, it will need a free space of at least 240cm long. For dimensions and weights of the crated and uncrated components refer to Table 3-3.

Figure 3-3 Dimensions of Positioner with dolly for moving

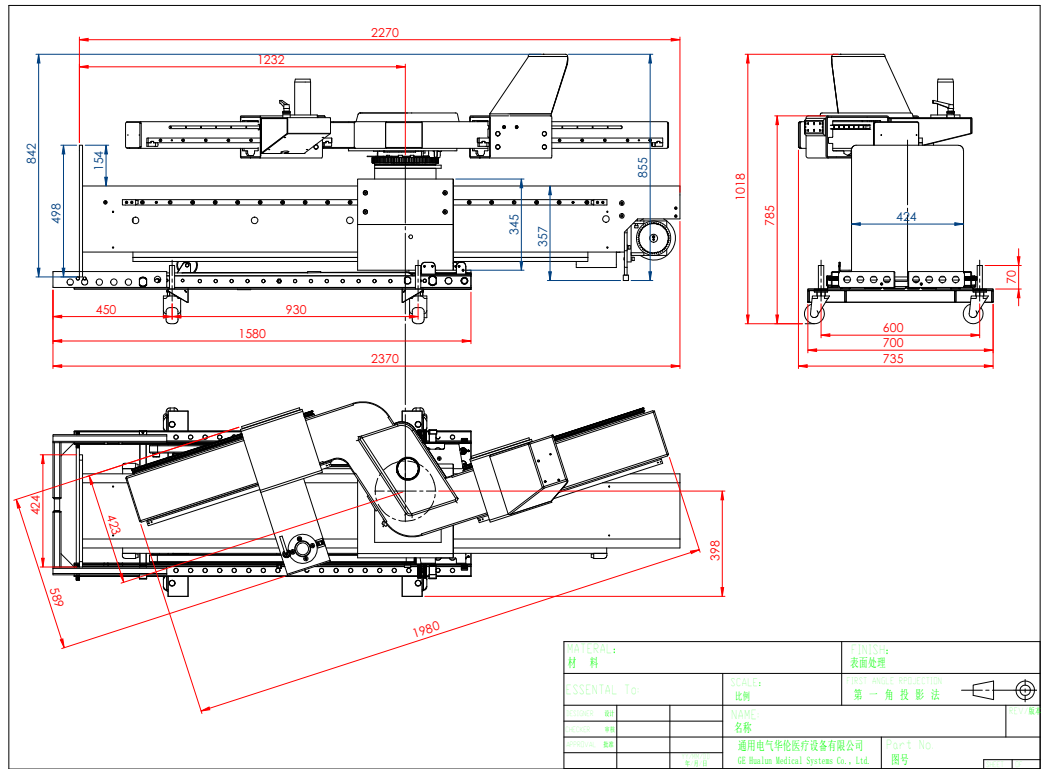


Figure 3-4 Dimensions of U-Arm moving with dolly at 45°

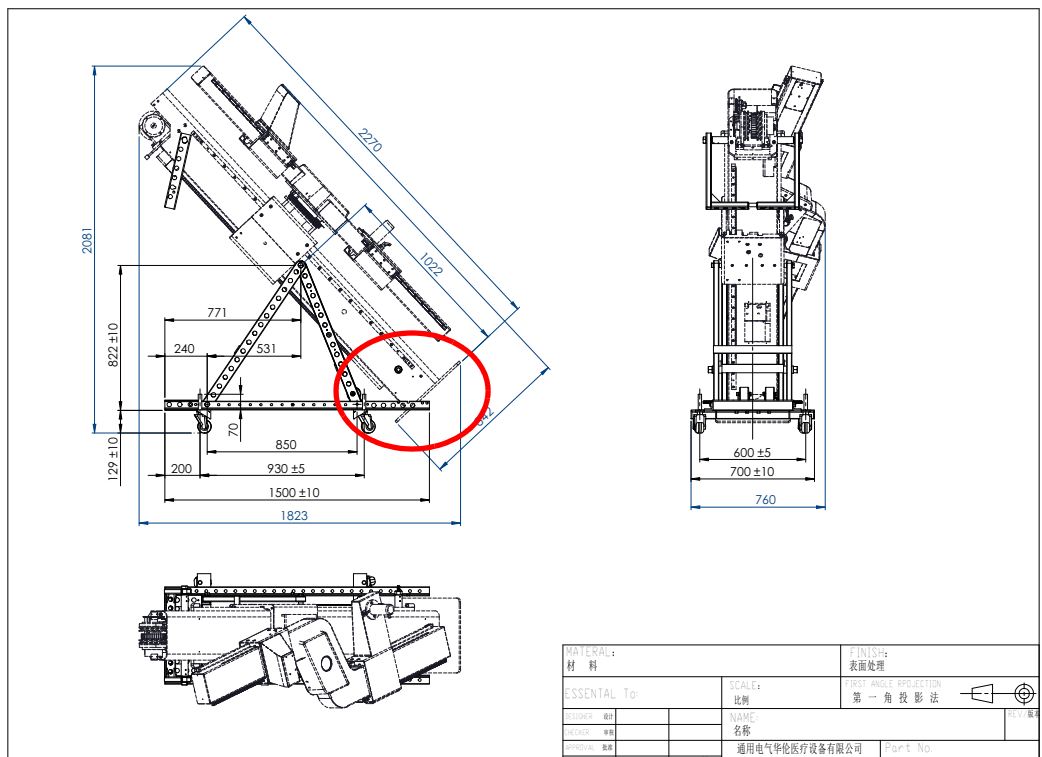


Figure 3-5 Dimensions of U-Arm moving with dolly at 48°

Note: In this angle between column and ground, the column will be too close to the ground to move forward or backward.

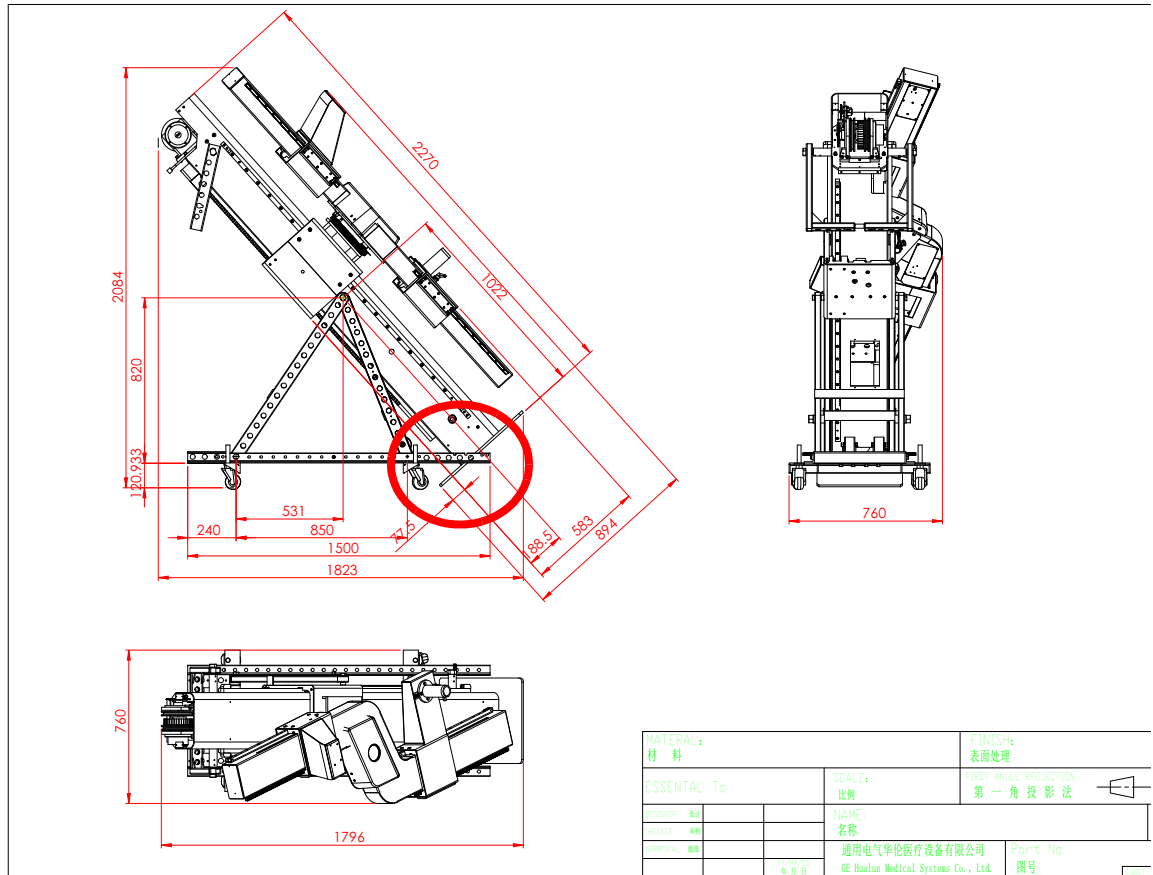


Figure 3-6 Dimensions of U-Arm moving with dolly at 0°

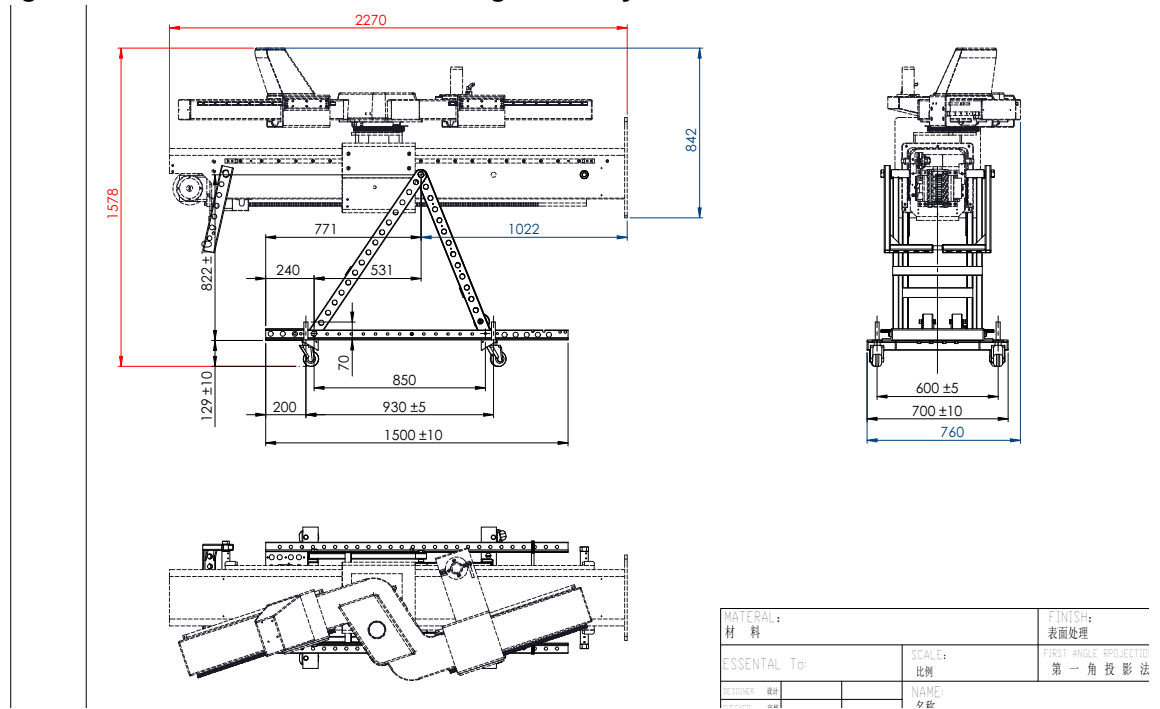


Figure 3-7 Dimensions of U-Arm moving through door of 190cm

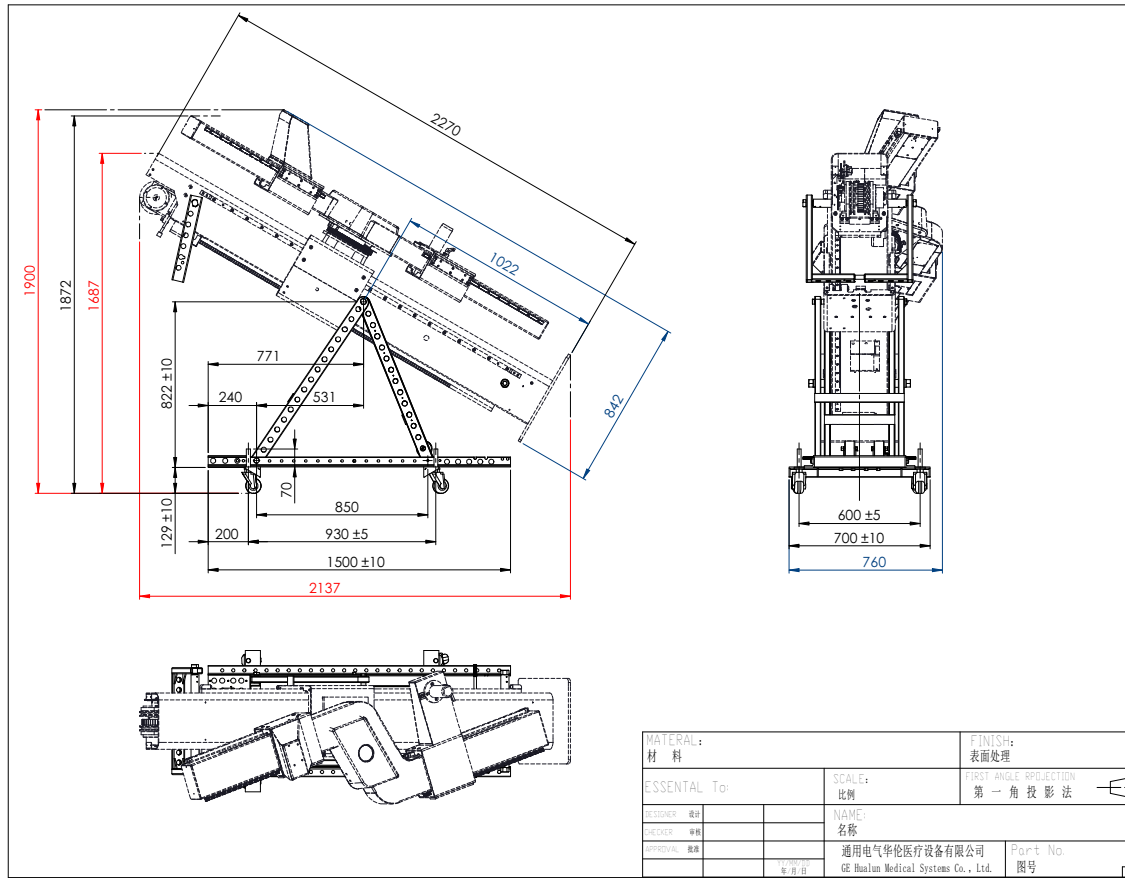


Figure 3-8 Dimensions of U-Arm moving through door of 200cm

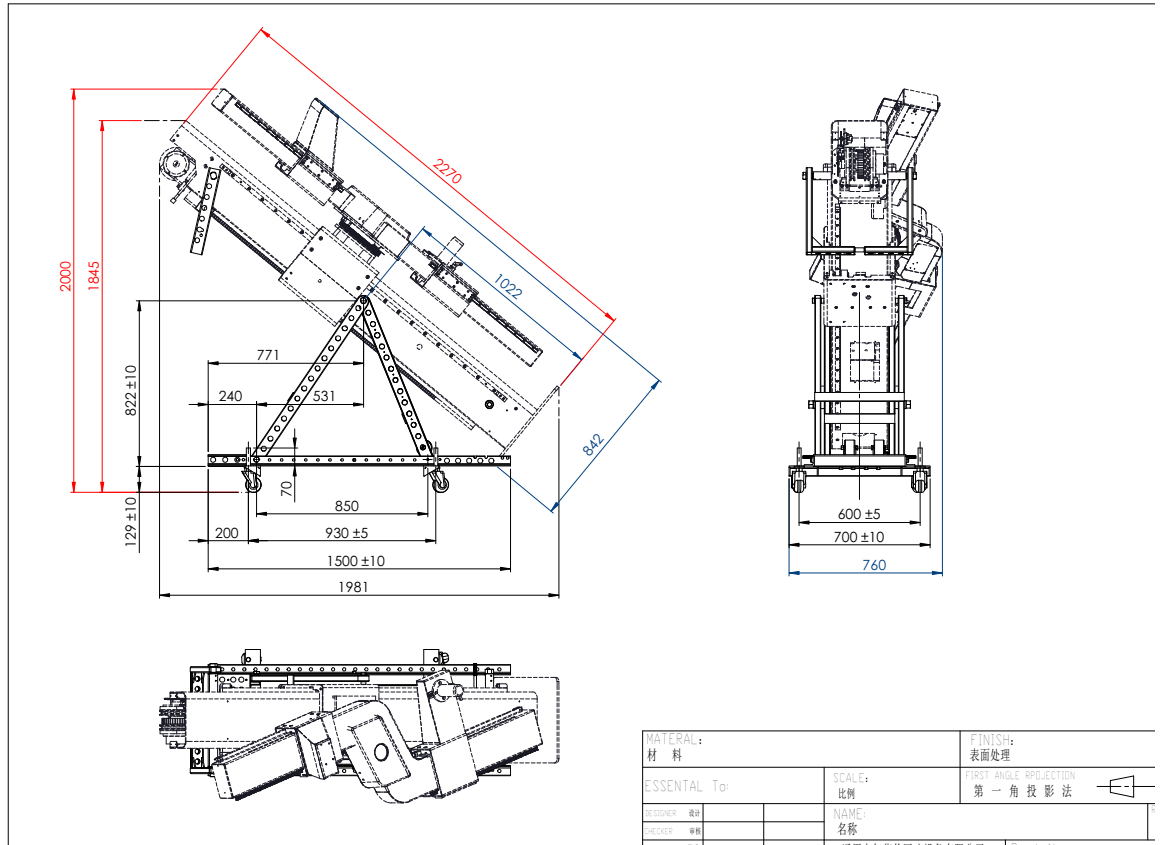


Figure 3-9 Dimensions of System Cabinet with Dolly for moving

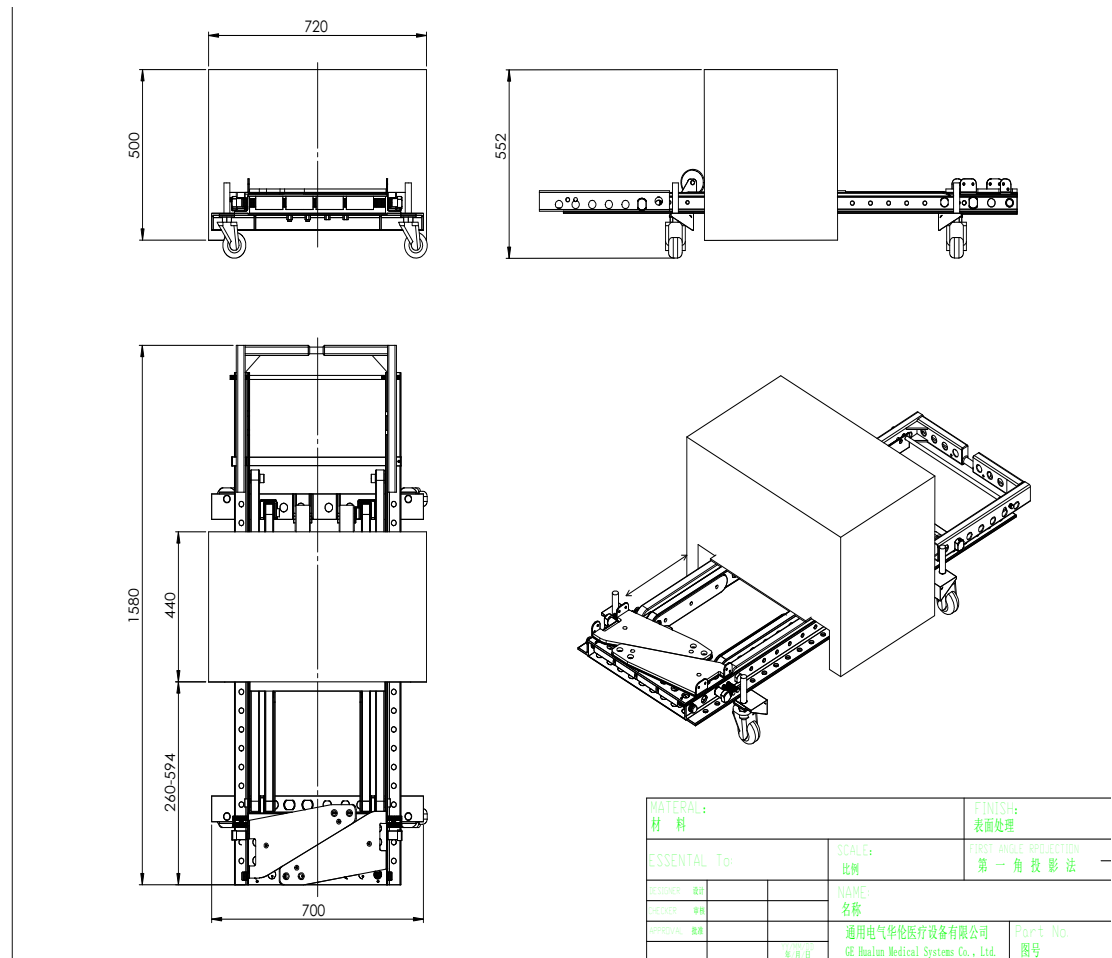


Table 3-3 Component Crated

PRODUCT TYPE	COMPONENT CRATED	HEIGHT	LENGTH	WIDTH	WEIGHT
Brivo XR575P	U-Arm and Column, X-Ray Tube, Detector Assembly and other components (Crate 1)	121cm	244cm	99cm	805Kg
Brivo XR575	U-Arm and Column, X-Ray Tube, Detector Assembly and other components (Crate 1)	121cm	244cm	99cm	730Kg
Brivo XR515	U-Arm and Column, X-Ray Tube, Detector Assembly and other components (Crate 1)	121cm	244cm	99cm	730Kg

PRODUCT TYPE	COMPONENT CRATED	HEIGHT	LENGTH	WIDTH	WEIGHT
Brivo XR515/575	Accessory (Crate 2)	116cm	172cm	135cm	363Kg
Brivo XR575P	Accessory (Crate 2)	121cm	244cm	99cm	387Kg
Brivo XR575P/575/515	Strecher Table (Crate 3)-if applicable	45.6cm	212cm	78.1cm	130kg
Brivo XR575P/575/515	Strecher Table (Crate 3)- if applicable	95cm	218cm	78cm	132kg

Table 3-4 Component Uncrated

COMPONENT UNCRATED	HEIGHT	LENGTH	WIDTH	WEIGHT
U-Arm and Column, X-Ray Tube, Detector Assembly and other components	2272mm	1836mm	2290mm	Brivo XR575P:713Kg Brivo XR575: 654Kg Brivo XR515: 638Kg
PDU	500mm	720mm	440mm	118kg
Strecher Table-if applicable	700mm	2162mm	690mm	65kg
Strecher Table-if applicable	700mm	2004mm	640mm	50kg

## 2.2 Floor Requirements

The method of installing the System Cabinet and U-Arm is:

COMPONENT	NORMAL METHOD OF MOUNTING
SYSTEM CABINET	Free standing
U-Arm	Anchor to floor with 6 x M12 bolts
<i>Note: For seismic areas Local Standards should be applied.</i>	

The Drill Template of the anchoring holes is shown in [Figure 3-11](#). Additional information about anchoring bolts and gravity center is indicated in Illustration.

### **CAUTION**

#### Potential for Injury and/or Equipment Damage:

Anchors must be a minimum of 65mm into no less than 110mm thickness concrete, the Pre-tightening Torque for each M12 anchors is advised to between 50-60NM. In addition, the general condition of the concrete in the immediate mounting area should be inspected to ensure that anchors will be set in good quality concrete.

**CAUTION**

It is not recommended to install a U-arm base under the column. If there isn't other choice to fix the U-arm except the base, the thickness of the base can't be over 2cm. And the area of the base can't be so large that it may cause the end of Arm with spacer will fail to move down to the lowest point.

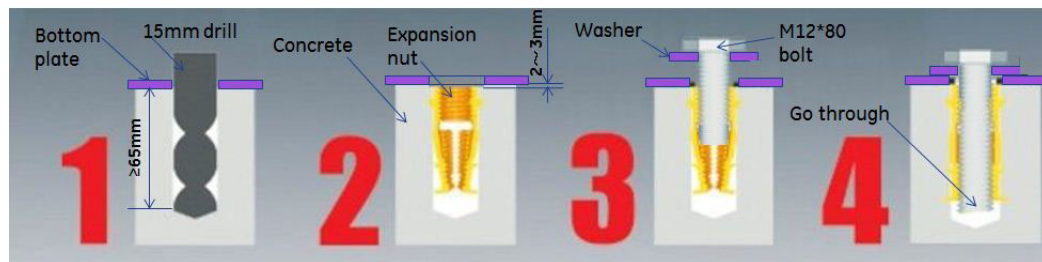


The System Cabinet and U-Arm are placed on the floor, which must accept the following weight and the weight/area:

COMPONENT	WEIGHT	LOAD BEARING AREA	WEIGHT / OCCUPIED AREA
SYSTEM CABINET	118kg	0.05m <sup>2</sup>	23200Pa
U-Arm	583kg	0.242m <sup>2</sup>	24090Pa

The floor bearing the U-Arm must be concrete and the thickness to be determined by a Structural Engineer to properly support the equipment loads. The anchors require a minimum embedment of 65 mm into the concrete. If the floor thickness is less than 110 mm, it is recommended to install a steel board under the column to strengthen the firm with the floor.

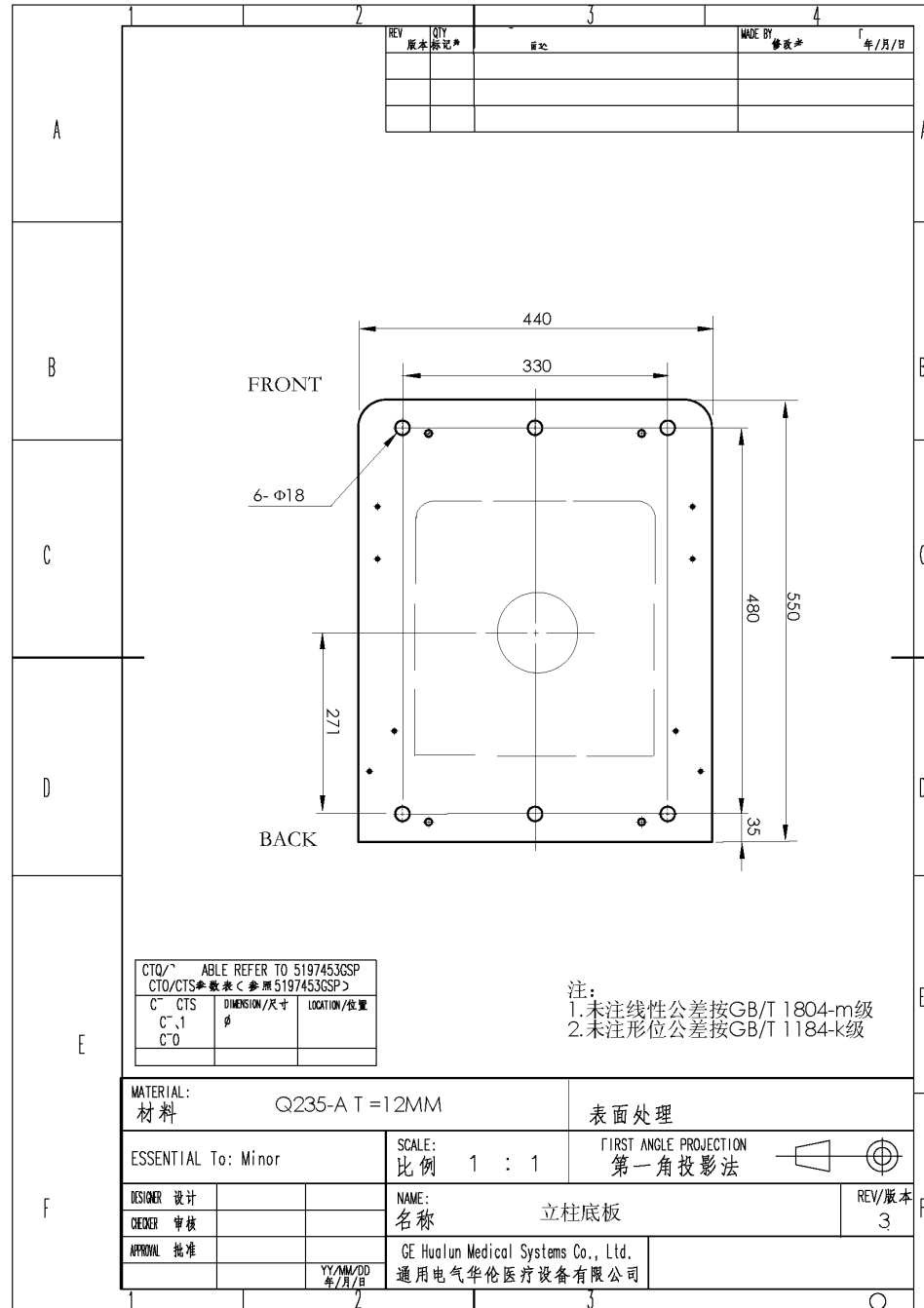
**Figure 3-10 To Drill in the concrete**



**CAUTION**

The anchoring ground for the U-arm have to be strong enough to ensure a safe installation, any non-bearing and not strong enough ground are not recommended for installing near to 800kg equipment.

Figure 3-11 Drill Template of the Anchoring Holes



## 2.3 Service Access Requirements

Allow appropriate space for service access of equipment, per country and regional requirements.



# Chapter 4 - Planning Electrical Connections

---

## Section 1.0 Routing Cables

### 1.1 General

High voltage and power cables must be separated from other cables. Use a separate trough in the duct system, or use a separate conduit. Minimize cable length between the line disconnect and the System Cabinet power unit to reduce voltage regulation problems and wiring costs.

For information about the cables supplied with your system, please refer to [Chapter 9 - - System Cable Information](#).

### 1.2 Conduit

Separate conduits must be used for power and signal wires. These wires must be kept separated from each other.

Using conduit imposes some important considerations when used with this system. Of primary concern, the majority of cables used are pre-terminated. Pre-termination greatly simplifies interconnection but makes cable-pulling difficult because of the added dimensions of the connectors.

Conduit must be large enough to pass the cable and connector through with all other cables already in the conduit. Also, the size of conduit chosen must allow for future growth. There is the possibility of additional cables being added later as the system is developed and options are added.

The use of conduit is recommended for cables running overhead between rooms, especially when a diagonal run provides the shortest cable path.

### 1.3 Electrical Ducts

It's important that electrical ducts have separate compartments for power and signal wires. These wires must be kept separated from each other for proper system operation.

Electrical ducts have advantages, when used with a single room or two adjacent rooms. Electrical ducts combine cabling in a neat and functional appearance, with accessibility and room for expansion.

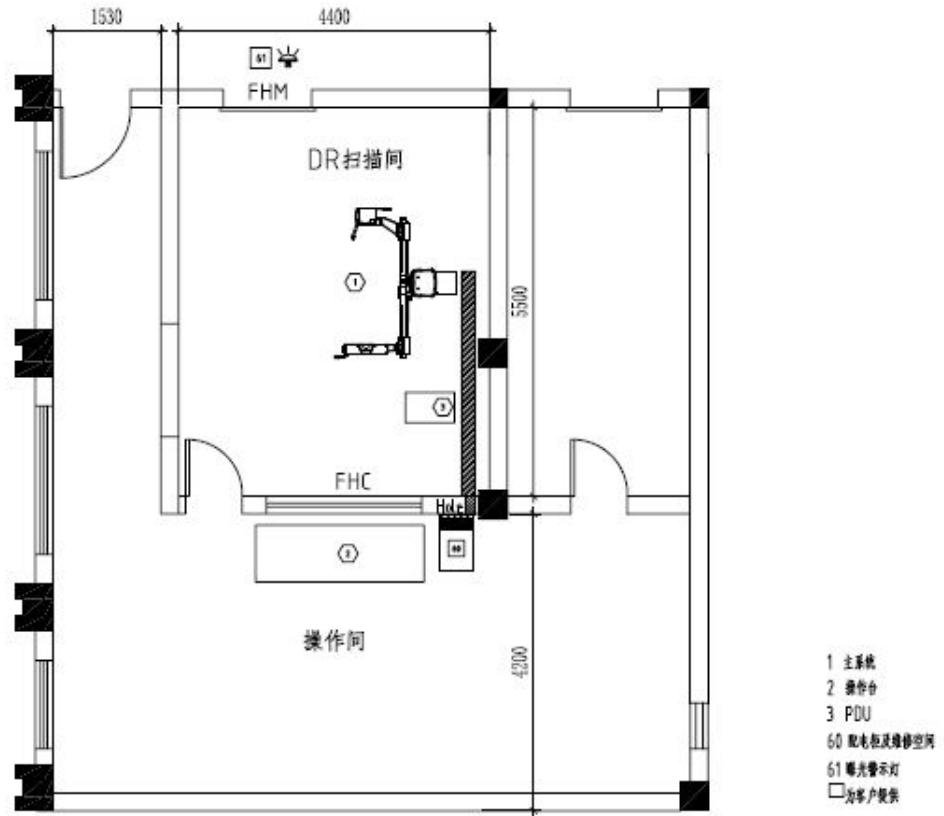


Figure 4-1 System Electrical Ducts

**CAUTION**

The cover plate of the ducts should open a notch for routing the cables from hospital to system.



## 1.4 Power Distribution

system power distribution consists of two major components that must either be customer supplied or GE Healthcare supplied. These are:

- Feeder power from Hospital distribution center to the Power Distribution Unit (PDU).
- Power distribution from the Power Distribution Unit (PDU) to all the components in the system room.

Usually the feeder power from the Hospital distribution center is customer supplied and the power distribution within the system is supplied by GEHC.

---

Note:  
Additional  
Reference  
Material Exists

For hospital facility feeder power and ground requirements to the system power unit, refer to: [Chapter 5 - - System Facility Power & Grounds](#).

For system power distribution from the System power unit, refer to MIS Map, see [Chapter 9 - - System Cable Information](#).

---

## Section 2.0 Hospital Network

### 2.1 Broadband Network Connection

systems are equipped with Broadband fast Ethernet hardware for Service diagnostics. systems equipped with Digital Imaging are capable of placing electronic images on the Hospital image Ethernet Network. It is the purchasers responsibility to provide the Ethernet connection (rated at 100Mb/sec transfer rate for optimal performance) within 0.91 meters of the Operator Console. The network connection is made at the Operator Console.

- 100BaseT network connection is preferred
- 10BaseT network connection is acceptable

Note: If using GE PACS LITE BOX software, the GE PACS LITE BOX software revision must be 6.1d02 or greater. Older versions will not work with the system.

For DICOM information, refer to: 5135613-100, Acquisition Workstation Conformance Statement for DICOM V3.0.

### 2.2 Remote Services Broadband Pre-Installation Requirements for Europe

- To enable an easier installation and to benefit from remote support (service and engineering teams), equipments should be Insite connected at installation.
- Thus the connectivity solution to implement should be decided during pre installation and all related data should be available before installation starts.
- For all installations make sure that you have at least one RJ45 dedicated to connect the new equipment on the LAN. In case of Broadband, this connection will also be used for the remote service of the equipment.
- GEHC offers a wide range of connectivity solutions: From full GE package (GE supplies Router and customer buys the line) to customized solutions (GE adapts to customer infrastructure).
- Network devices (like CISCO Routers for instance) can be shipped with the equipment only if the Sales Representative has added the connectivity item in the order.

For complete descriptions of these connectivity solutions, please refer to the Broadband Solutions

- catalogue available through your local GEHC sales and service representative.

- Connectivity Process and pre-installations checklists are available in the Broadband connectivity PIM available through your local GEHC sales and service representative.
- For each solution selected by the customer the pre-installation checklist must be fulfilled by site IT manager in order to get connectivity information (site IT manager contacts, IP address...) available at installation.
- In case Broadband is not available: Modem A dedicated phone line using a RJ11 used only for the connection to a modem must be located at 1 mm maximum from the operator console.
- This line will be a direct classical phone line.

## Section 3.0

### Master Interconnect System (MIS)

System interconnect cables are described in MIS (Master Interconnect System) documents shipped with the system. These documents specify all interconnections between components within the system and its options.

Note:  
Additional  
Reference  
Material Exists

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For specific system interconnect maps and connection details, please refer to [Chapter 9 -- System Cable Information](#).

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# Chapter 5 - System Facility Power & Grounds

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## Section 1.0 Introduction

The purpose of this chapter is to ensure that the product is properly powered and grounded, thus ensuring the proper operation of the product installed. The information in this chapter should be adhered to, unless there are written deviations approved by GE Healthcare.

This chapter gives the sizes and procedures on how to power and ground your system. If these power and grounding instructions are not adhered to, proper operation cannot be guaranteed. Any cost associated and found to be a result of non-conformity, as stated in this chapter, may result in additional cost charged back to the institution and/or their contractor.

### NOTICE

**All system and sub-system power connections shall be made ONLY to power outlets that are connected to the system.**

All system component power connections must be made in accordance with the MIS Map, see [Chapter 9 - - System Cable Information](#).

## 1.1 Power Quality

The electrical power, from its origination to the system, must adhere to the wire size and transformer sizes as prescribed in the installation drawings. The feeder voltage-drops, as well as the supplying power, must be within the given parameters. Sizing for feeder is usually calculated for a maximum of 2% voltage drop at the minimum voltage range. The actual feeder sizing may vary from the installation drawing for a facilities voltage.

Calculate feeder losses before you begin. Total feeder losses must be calculated to ensure that the losses are less than those specified in the installation drawings. Calculating the recommended minimum transformer sizing for feeding a system ensures the transformer losses are less than half of the maximum regulation for the system.

Regulation is the calculated voltage losses for the entire power distribution system (No-Load Voltage minus Full-Load Voltage) divided by the no-load voltage minus the system losses (Full-Load Voltage):

$$\text{Regulation} = \frac{\text{NoLoadVoltage} - \text{FullLoadVoltage}}{\text{FullLoadVoltage}} \times 100$$

In the X-ray room, there must be a lockable facility power disconnect. It must be installed electrically before the equipment, for the purpose of locking out the power. This must be done before service to the high voltage system is performed.

## 1.2 Electrical Requirements

**NOTICE**

In China, all cables used to provide system power and ground must be CCC certified.

**NOTICE**

Only WYE connected power source are currently permitted, due to current system (generator) design.

All system components obtain their power from the Power Distribution Unit (PDU) under the system table. **Providing power and ground wires to the PDU are the responsibility of the customer.** As an aid, wire sizes for various lengths of the power supply cable are shown in the following tables. The procedures to replace power supply cable and ground cable can only be performed by qualified engineer.

**WARNING**

**PE CABLES SHALL HAVE THE DIAMETER NOT LESS THAN THE POWER SUPPLY CONDUCTOR, AND SHALL HAVE AN IMPEDENCE NOT MORE THAN 0.1 OHMS.**

### 1.2.1 System Electrical Requirements

#### 1.2.1.1 System Power Specifications

PARAMETER	JEDI GENERATOR - 50kW				
Input Voltage	380/400/440/480 VAC WYE 3-Phase and ground without neutral				
Required Power Source	WYE Distribution				
Daily Voltage variations	+/- 10% (VAC) In this range, the generator will operate without any de-rating in accuracy.				
Line Impedance	The apparent line impedance guaranteed by the customer should be equal or less than the values indicated below, according to the voltage value and the commercial power of the generator. <b>Voltage range (V)    Line Impedance (ohms)</b> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>3 phase</th> <th>50kW</th> </tr> </thead> <tbody> <tr> <td>380</td> <td>0.15</td> </tr> </tbody> </table>	3 phase	50kW	380	0.15
3 phase	50kW				
380	0.15				
HV cable length	12 m				
HV cable type	IB EEC: 22 mm cable de Lyon (<=150 pF/m) USA: 22 mm DSI (<=165pF/m) EEC: 16 mm Claymount (<=165 pF/m) HV cable connector = Federal standard				
Ground Wire	#8 AWG				
Inrush current	600 A				
Normal Frequency	50/60Hz(+/-3Hz)				

**Table 5-1 System Power Specifications**

PARAMETER	JEDI GENERATOR - 50kW
Daily frequency variation	47~63Hz

**Table 5-1 System Power Specifications**

### 1.2.2 Recommended Power Supply

PDU Power Supply cable is offered by the customer, and also can be ordered from GE (S39222KP). Recommended minimum wire size for various lengths of the Power Supply cable are shown in [Table 5-2](#).

Note: Power cable should be flexible enough to allow generator to roll back into table.

PARAMETER Input Voltage Wire Size Length	THREE PHASE GENERATOR - 50kW							
	380 VAC		400 VAC		440 VAC		480 VAC	
15 m (50 ft.)	10 mm <sup>2</sup>	(#8 AWG)	10 mm <sup>2</sup>	(#8 AWG)	10 mm <sup>2</sup>	(#8 AWG)	10 mm <sup>2</sup>	(#8 AWG)
30 m (150 ft.)	16 mm <sup>2</sup>	(#6 AWG)	16 mm <sup>2</sup>	(#6 AWG)	16 mm <sup>2</sup>	(#6 AWG)	16 mm <sup>2</sup>	(#6 AWG)
46 m (200 ft.)	22 mm <sup>2</sup>	(#5 AWG)	22 mm <sup>2</sup>	(#5 AWG)	22 mm <sup>2</sup>	(#5 AWG)	22 mm <sup>2</sup>	(#5 AWG)
60 m (100 ft.)	30 mm <sup>2</sup>	(#3 AWG)	30 mm <sup>2</sup>	(#3 AWG)	30 mm <sup>2</sup>	(#3 AWG)	30 mm <sup>2</sup>	(#3 AWG)

**Table 5-2 Minimum Wire Size 50 kW**

Phase	3	3	3	3
Nominal Line Voltage (Vac)	380	400	440	480
Voltage Range (Vac)	+/- 10%	+/- 10%	+/- 10%	+/- 10%
Momentary Line Current (Amp)	110	105	95	88
Continuous Line Current (Amp)	7	6.7	6	5.5
Power Demand (kVA)	70	70	70	70
Frequency	47/53Hz and 57/63Hz			

**Table 5-3 kVA Load Characteristics 50 kW**

**Table 5-4**

<b>Output</b>	<b>50kw</b>
<b>Maximum tube voltage and the voltage of the tube currents</b>	<b>150kV, 320mA</b>
<b>Maximum tube current and the current high voltage</b>	<b>630mA, 80kV</b>
<b>Maximum output power of tube voltage and current</b>	<b>80kV, 630mA</b>

**1.2.3 Recommended Wall “Circuit-Breaker” Ratings**

Power / Voltage	50KW
380 V	55 A / 600 V
400 V	52 A / 600 V
440 V	47 A / 600 V
480 V	43 A / 600 V

**Wall Breaker Parameter (Theoretical Current Values)**

Note: The main circuit breaker supplied by the customer must be sized in accordance to local regulations.  
 Shunt trip circuit breaker required.

## 1.2.4 Wiring Electrical Power and Disconnects

This section provides additional data regarding power circuits the customer must provide, and internal electrical circuits necessary to supply the correct power to the system. Figure 5-1 shows the room power supply installed.

### 1.2.4.1 Room Power Supply

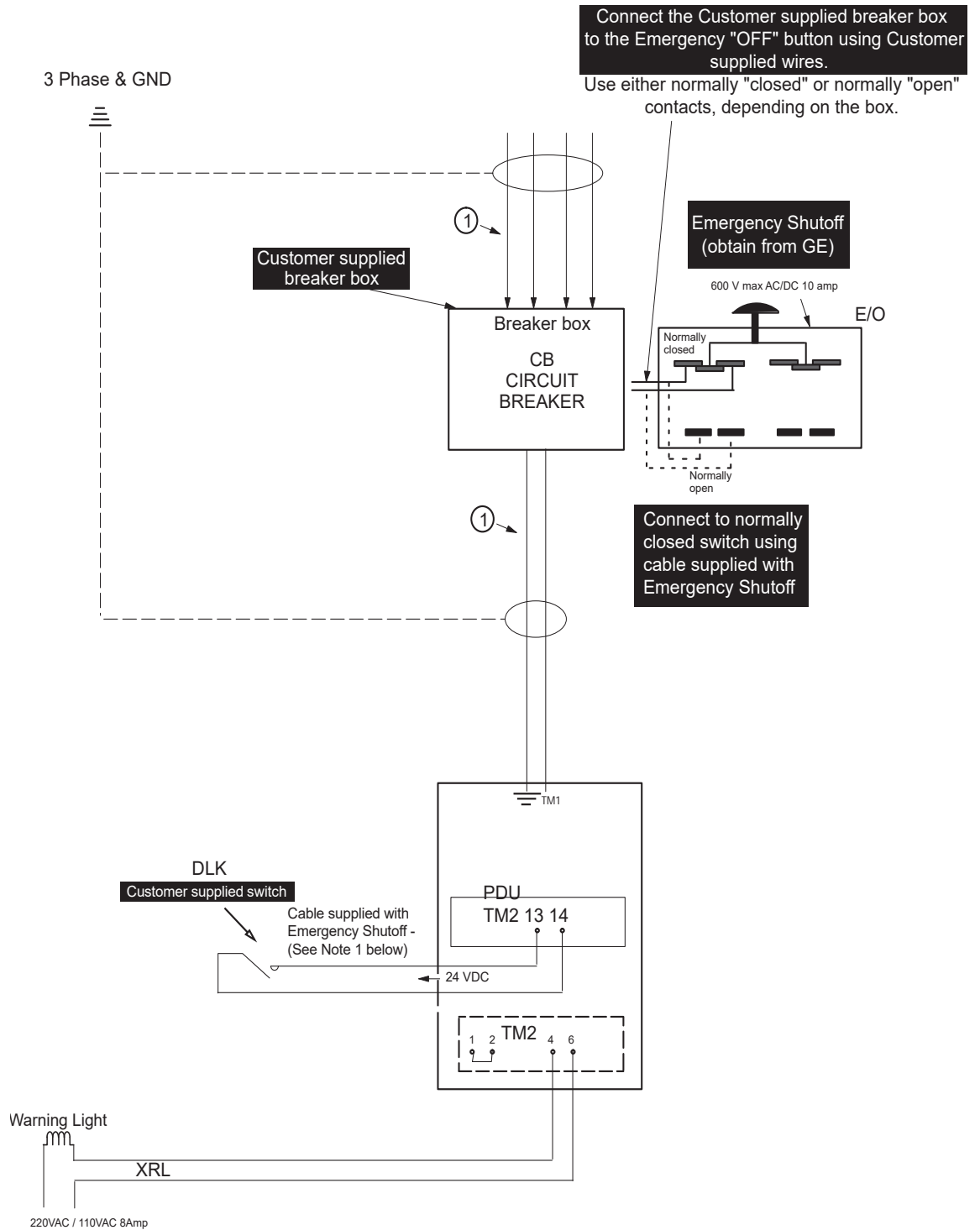


Figure 5-1 Room Power Supply (see Table 5-5 for Legend)

Key for Figure 5-1	Description
CB	Circuit breaker with remote trip (shunt) capabilities supplied by customer.
DLK <i>(see note below)</i>	Open-door detector (per local regulations). SKL provides 24 VDC.
XRL	Yellow X-ray emission indicator lamp above the room access door. 220 V in Europe/120 V in USA with 25 W max. bulb (per local regulations). Wires and light fixtures supplied by customer.

**Note:** Use only a multi conductor, shielded, PVC/PVC, UL TYPE CM cable. Alpha Wire. CQA10210637. This wire is found in GE Catalog Item A8091JH as a “bulk” roll of wire (60 Meters). Material consists of two 16 AWG (19/0.0117 strand) conductors. Shields must be grounded at both ends.

Table 5-5 Legend for Figure 5-1 and Figure

### 1.2.4.2 Multiple Emergency “OFF” Switches

Figure 5-2 shows how multiple emergency “OFF” switches could be wired.

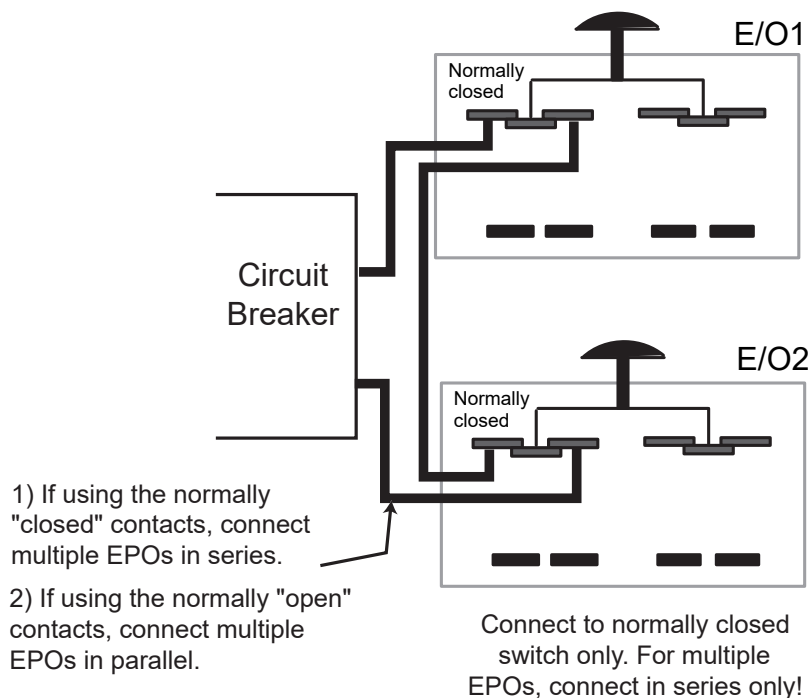


Figure 5-2 Wiring Multiple “Emergency OFF” (E/O) Switches

### 1.2.4.3 Customer-supplied Electrical Outlet

Customer must provide an electrical outlet of appropriate voltage rating within 0.91 meters of the System Cabinet.

## Section 2.0 Electrical Grounds

### 2.1 System and Facility Grounds

The ground for this system must originate at the system's power source and be continuous (i.e., transformer or first access point of power into a facility, and be continuous to the system power disconnect in the room). Ground connection at the power source must be at the grounding point of the "Neutral/Ground" if a "Wye" transformer is used, or typical grounding points of a separately derived system. In the case of an external facility, it must be bonded to the facility ground point at the electrical service entrance.

The "system" ground can be spliced using "High Compression Fittings" but must be properly terminated at each distribution panel it passes through. When it is terminated, it must be connected into an approved grounding block. Incoming and outgoing grounds must terminate at this same grounding block. Grounds must only be terminated to approved grounding blocks. Grounds must never connect directly to the panels, frames or other materials in a cabinet or distribution panel (refer to [Figure 5-3](#)).

### 2.2 Recommended Ground Wire Sizes

The ground wire must be copper and never smaller than 8 AWG.

The ground wire impedance from the system disconnect (including the ground rod) measured to earth, must not exceed 2 ohms (as measured by one of the applicable techniques described in Section 4 of ANSI/IEEE Standard 142 - 1982). Refer to [Figure 5-3](#) and [Figure 6](#) for typical equipment and methods to measure the different portions of the 2 ohm impedance.

Note:  
Additional  
Reference  
Material Exists

For general system grounding requirements and information on establishing an equi-potential grounding system, refer to:

- Direction 46-014505, *Electrical Safety - Equipment Grounding*
- Direction 46-014546, *Electrical Safety - Leakage Currents*

For specific system grounding maps and connection details, refer to [Chapter 9 - - System Cable Information](#).

### 2.3 Final Checks, Before System Installation Can Begin

The customer must provide GE Healthcare or its representative (installation specialist) evidence that grounds and electrical power meet GE Healthcare's specifications.

Prior to product installation, a local service or installation specialist, to be determined by GEHC, will do a physical walk through of the exam suite to ensure the following:

- 1.) Ground wires are of the same size as the power feeder or 8 AWG, whichever is larger.
- 2.) Grounds at junction points are connected properly and securely to an approved ground bus.
- 3.) Grounds within an enclosure are tied together by copper wire or to an appropriate buss bar (i.e., separate buss bars within an enclosure must be tied together with copper wire of appropriate size).
- 4.) Grounds originate at the power source (i.e., transformer or entrance panel into facility).
- 5.) Ground wires measure less than 2 ohms to earth.
- 6.) Ensure the ground wire isn't connected with neutral line.

You may use the following form to record the results of that inspection.

GROUND IMPEDANCE MEASURED TO BE \_\_\_\_\_ OHMS

Inspector's Name and Date: \_\_\_\_\_

Customer's Name and Date: \_\_\_\_\_

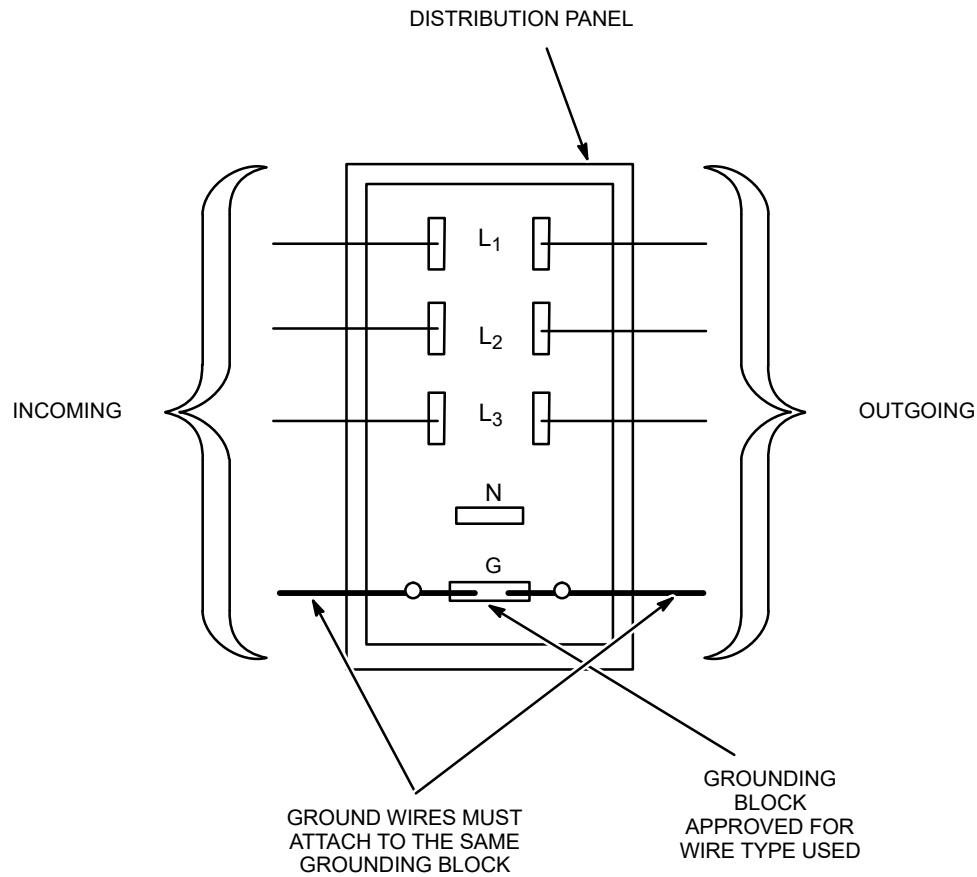
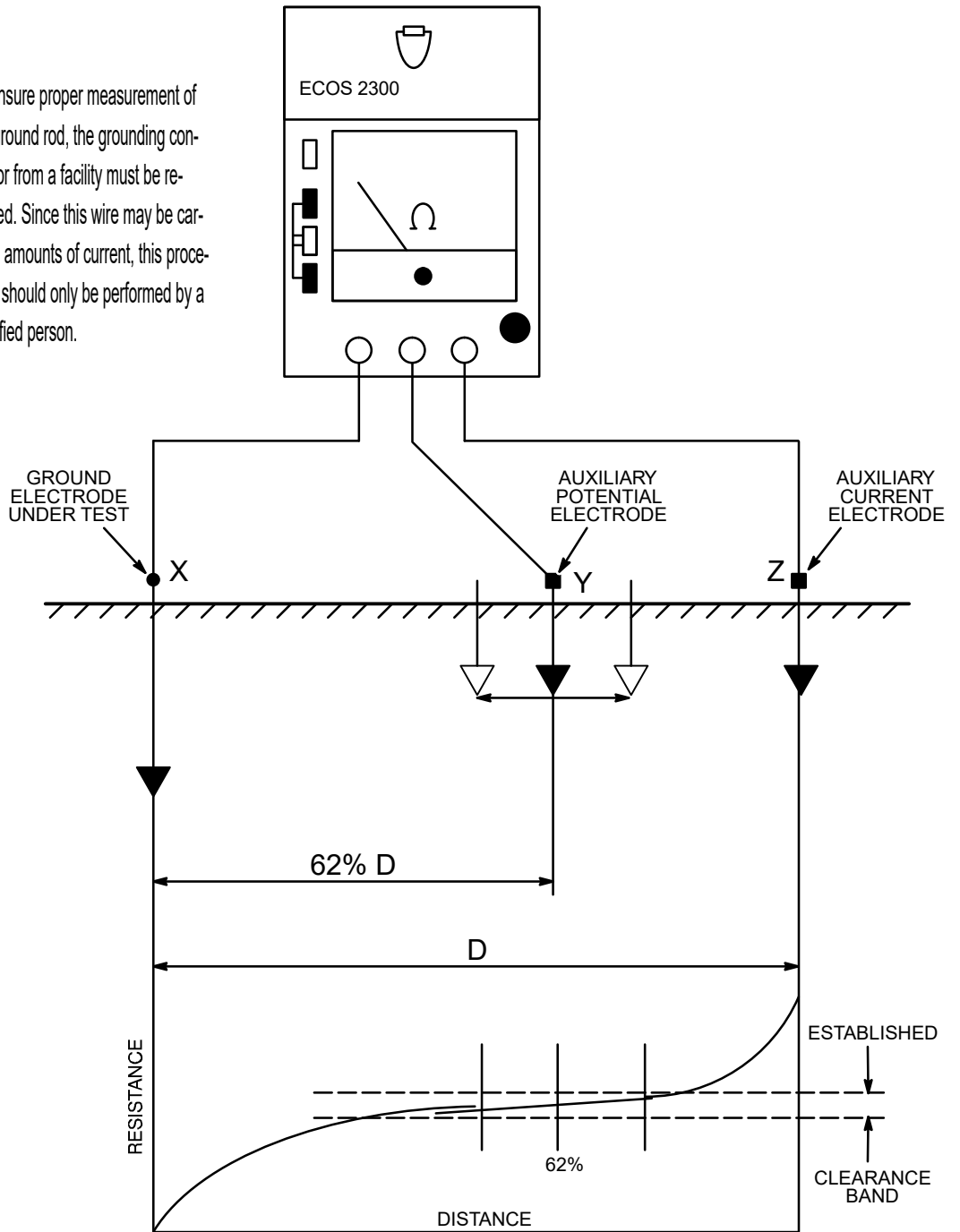


Figure 5-3 Ground Connection at Distribution Panel

To ensure proper measurement of the ground rod, the grounding conductor from a facility must be removed. Since this wire may be carrying amounts of current, this procedure should only be performed by a qualified person.





# Chapter 6 - Product Characteristics

## Section 1.0 Overview

Refer to this section for dimensional drawings for the components of the system. These components include:

- System
- Operator Console
- Strecher Table
- Sysem Cabinet
- U-Arm.
- Dolly.

Note: Drawings are not to scale. Dimensions are called out on each drawing.

## Section 2.0 System Components Dimensions and Weights

### 2.1 Dimensions

PRODUCT OR COMPONENT	DIMENSIONS			WEIGHTS
	Width	length	Height	
Operator Console:				
PC	450.2 mm	455.3 mm	167.9 mm	19.6Kg
LCD Monitor- if applicable	344mm	418mm	82.5mm	Without Stand: 6.5kg(LGW & LG) & 7.7kg( LC9) Stand: 3.27kg
LED Monitor- if applicable	192 mm	417 mm	486 mm	With Stand: 4.9Kg Without Stand: 3kg
Console	120 mm	270 mm	60 mm	1Kg
Table- if applicable	690 mm	2162 mm	700 mm	65Kg
Table- if applicable	640 mm	2004 mm	700 mm	50Kg
System Cabinet	471 mm	725 mm	445mm	118Kg
*Showing: Mounting Holes, Cable Entrance, Air Vents, Service Access, Center of Gravity				

**Table 6-1 Product Physical Characteristics (Width / length/ Height/ Weight)**

PRODUCT OR COMPONENT	DIMENSIONS			WEIGHTS
	Width	length	Height	
U-Arm	2290 mm	1836 mm	2272 mm	Brivo XR575P:713Kg Brivo XR575: 654Kg Brivo XR515: 638Kg
*Showing: Mounting Holes, Cable Entrance, Air Vents, Service Access, Center of Gravity				

**Table 6-1 Product Physical Characteristics (Width / length/ Height/ Weight)**

## 2.2 Dimensioned Figures and Drawings

### 2.2.1 Control room collector

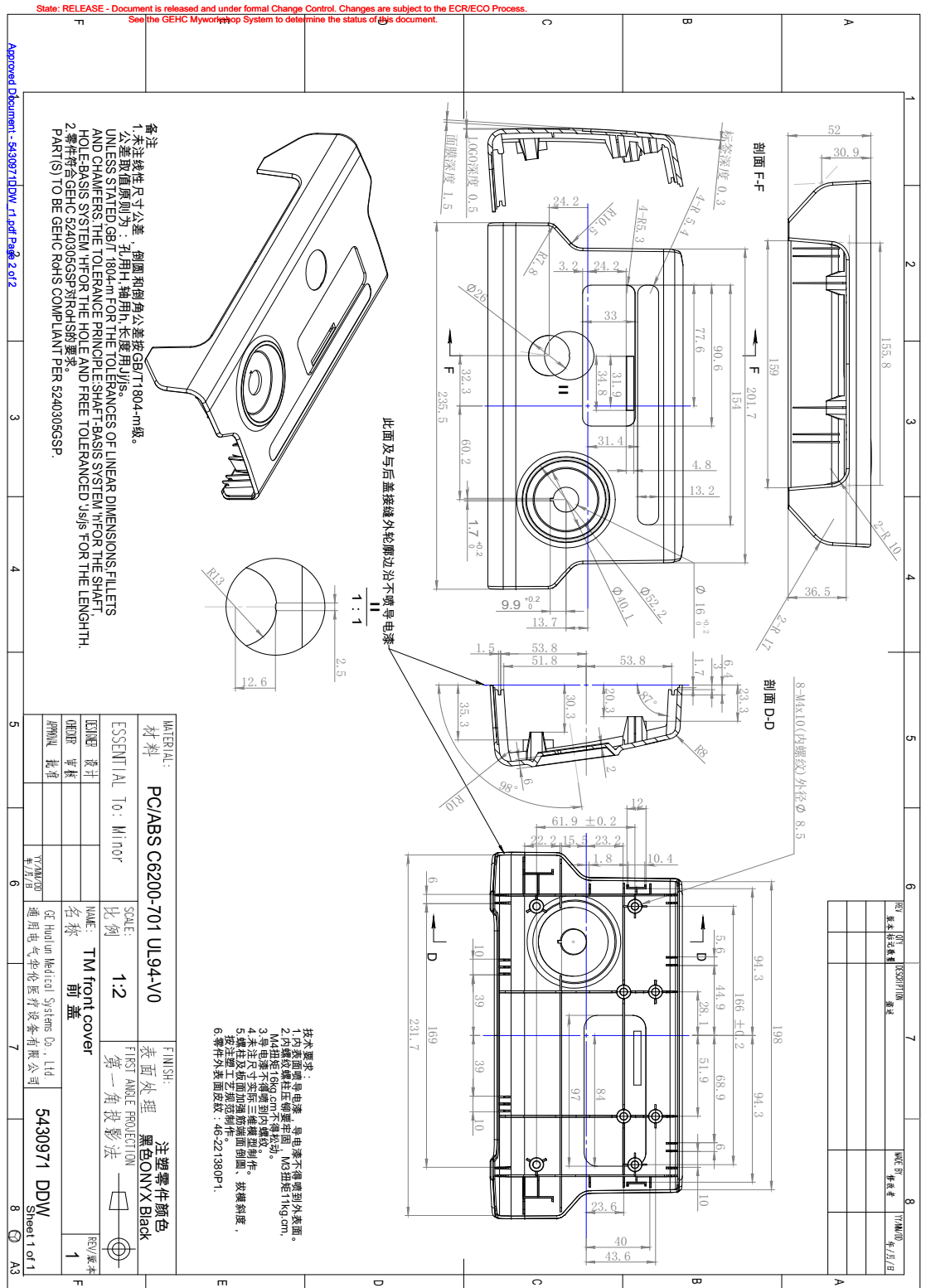


Figure 6-1 Keyboard / Mouse / Console / Exposure Handswitch

2.2.2 System

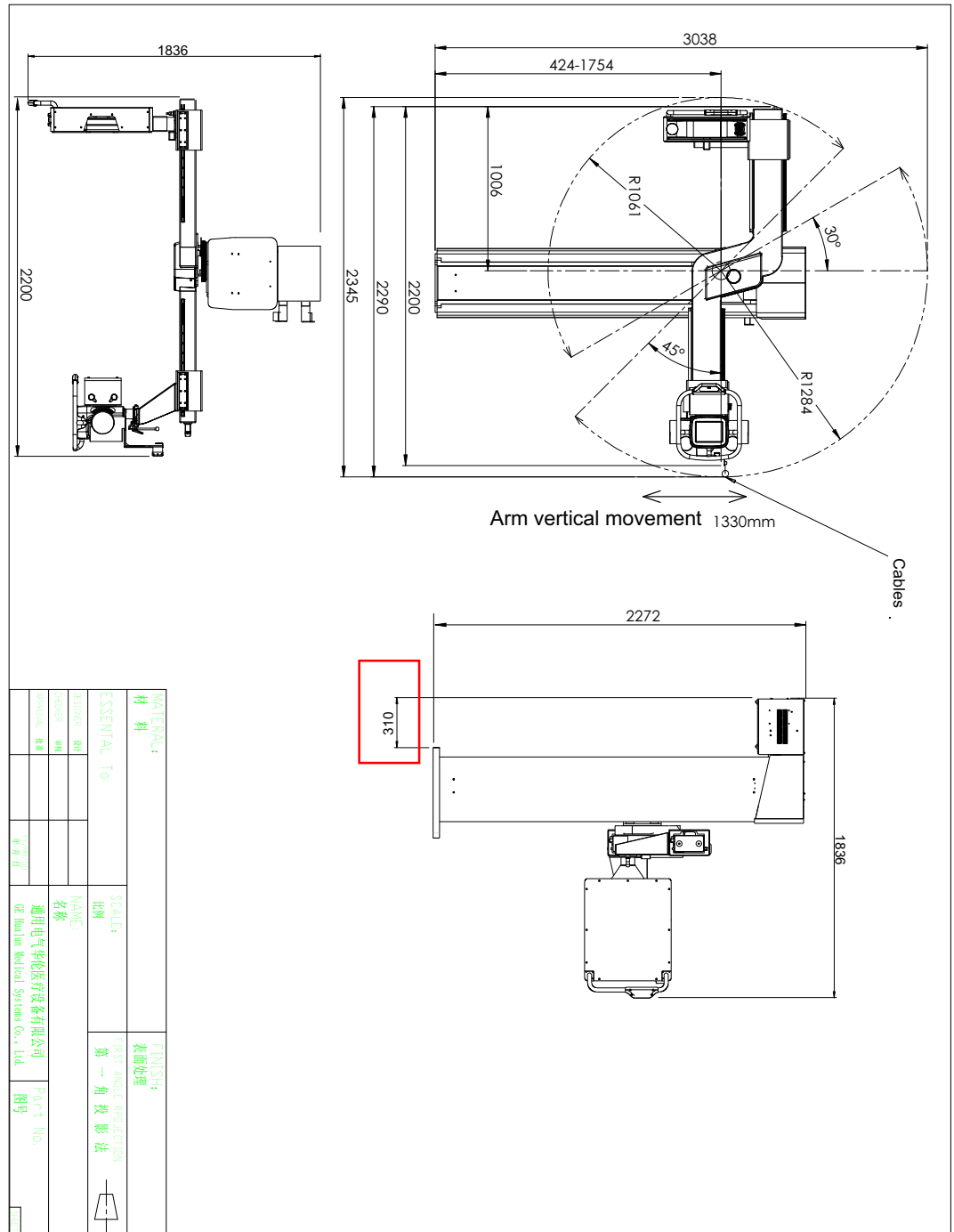


Figure 6-2 Brivo XR575 System Views

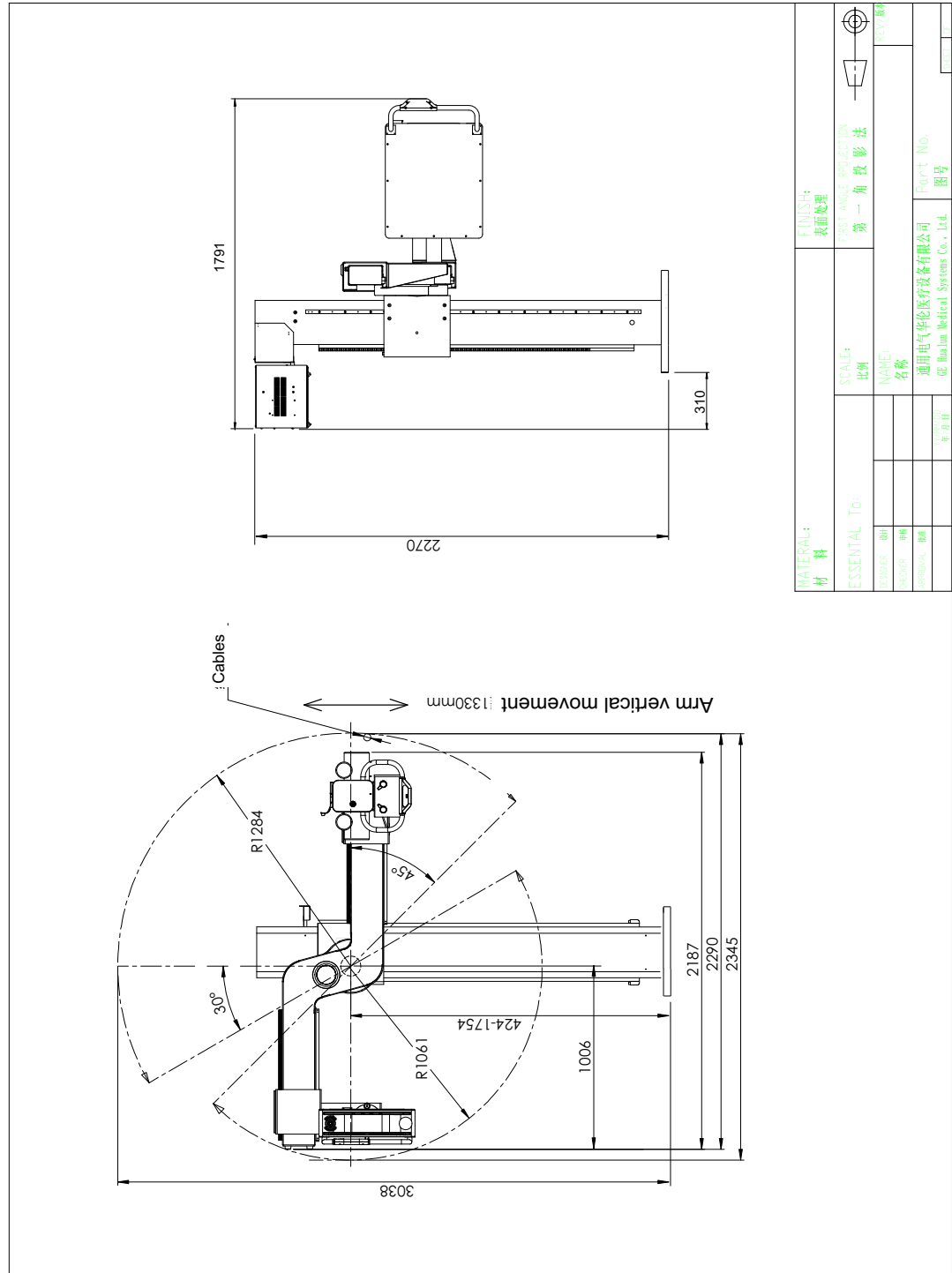


Figure 6-3 Brivo XR515 System Views

Note: The least SID is 1m.

2.2.3 Stretcher Table

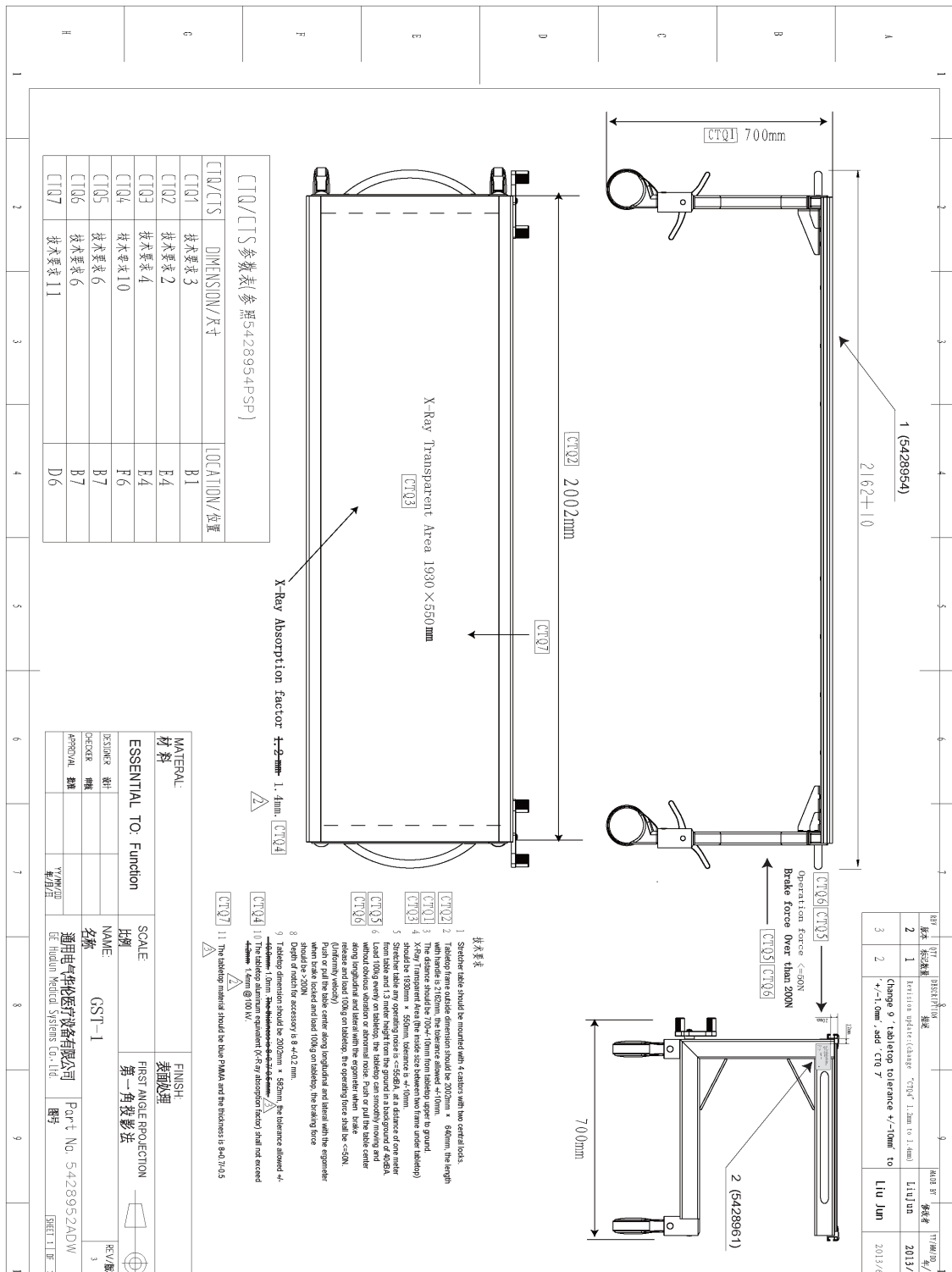


Figure 6-2 Detailed service and operator area requirement

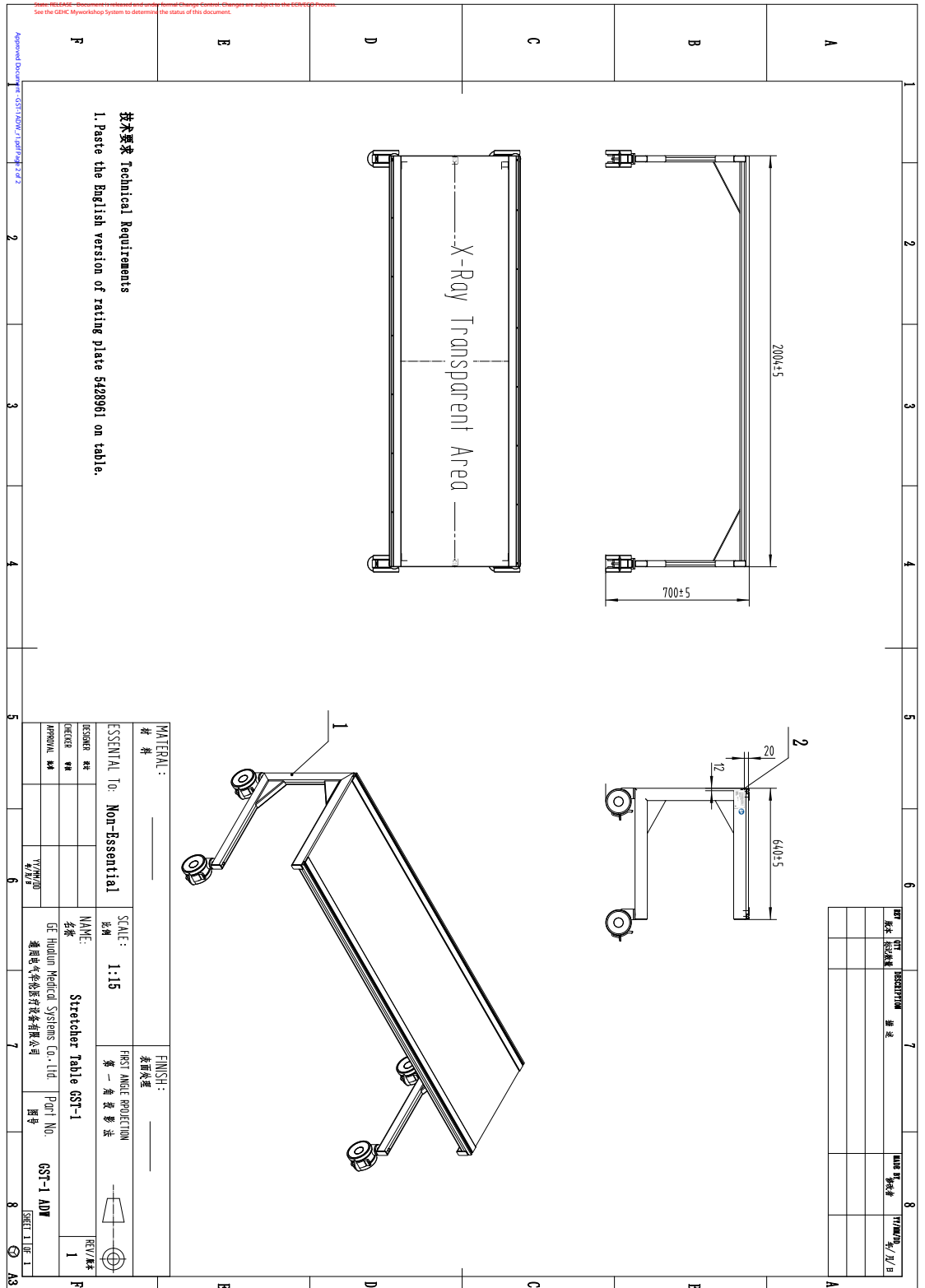
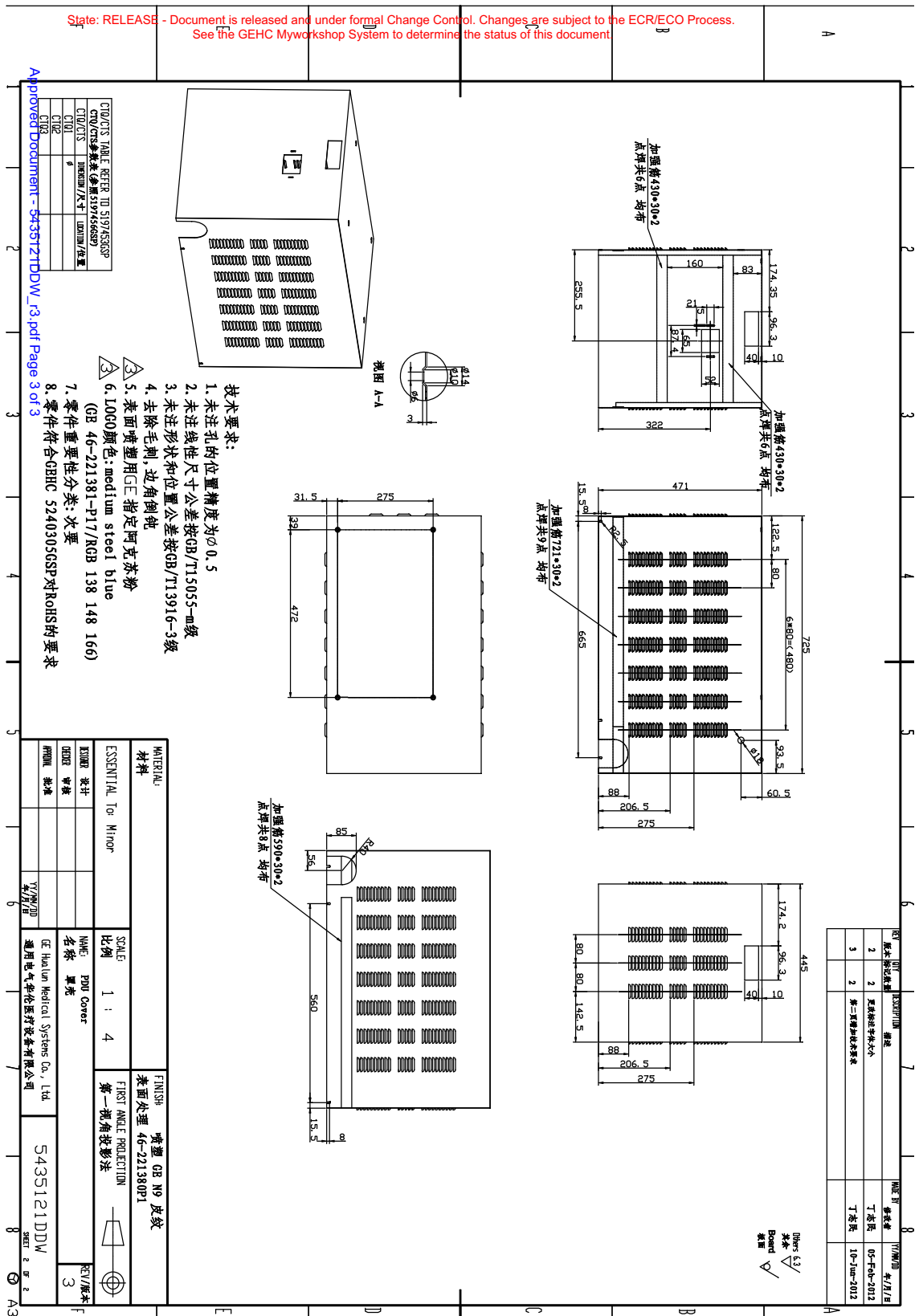


Figure 6-4 stretcher Table Front View, Side View, Top View

2.2.4 System Cabinet

Figure 6-5 System Cabinet Front view, Side view, Rear view and Top view



2.2.5 U-Arm

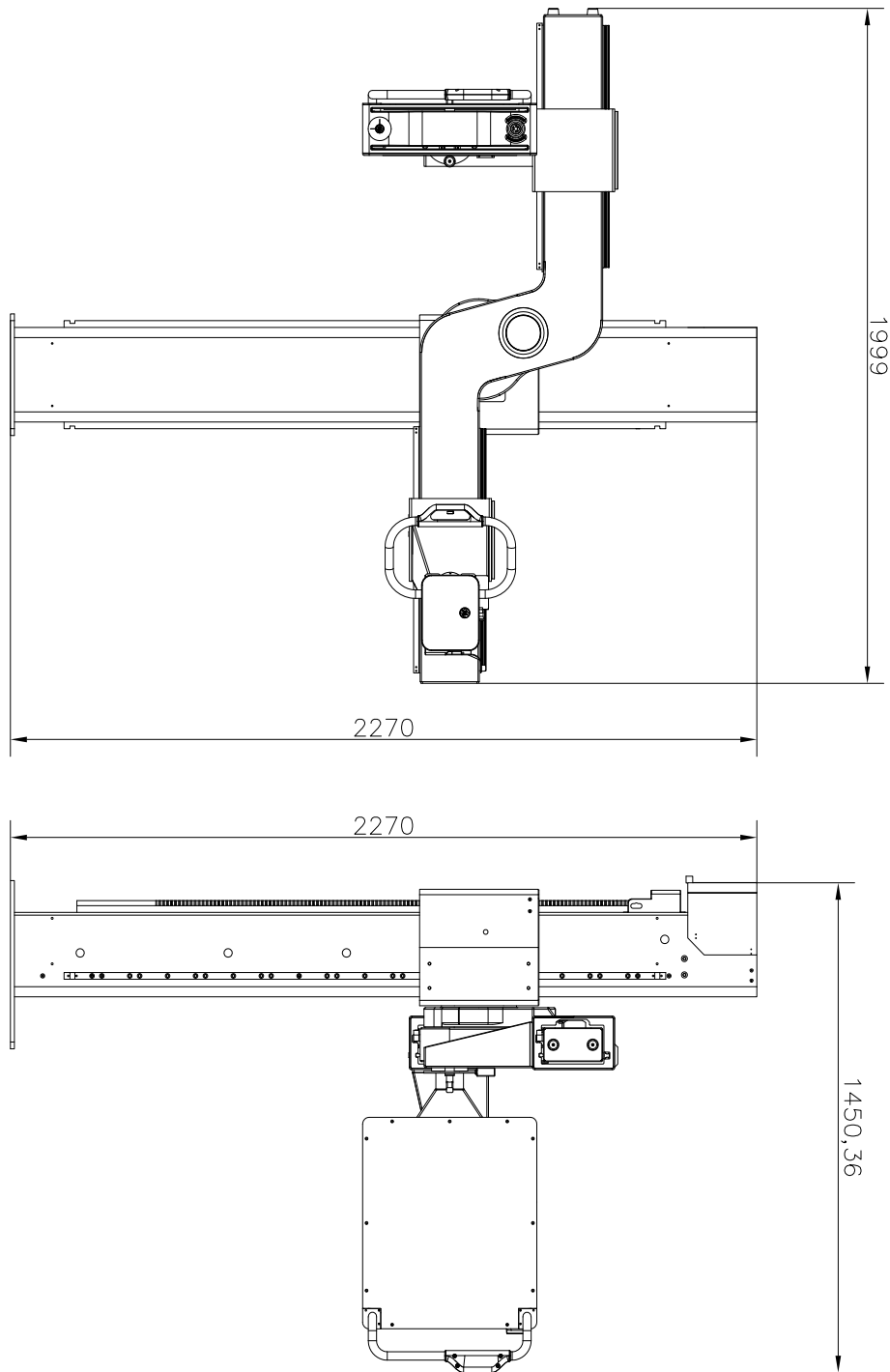


Figure 6-6 U arm front view & side view

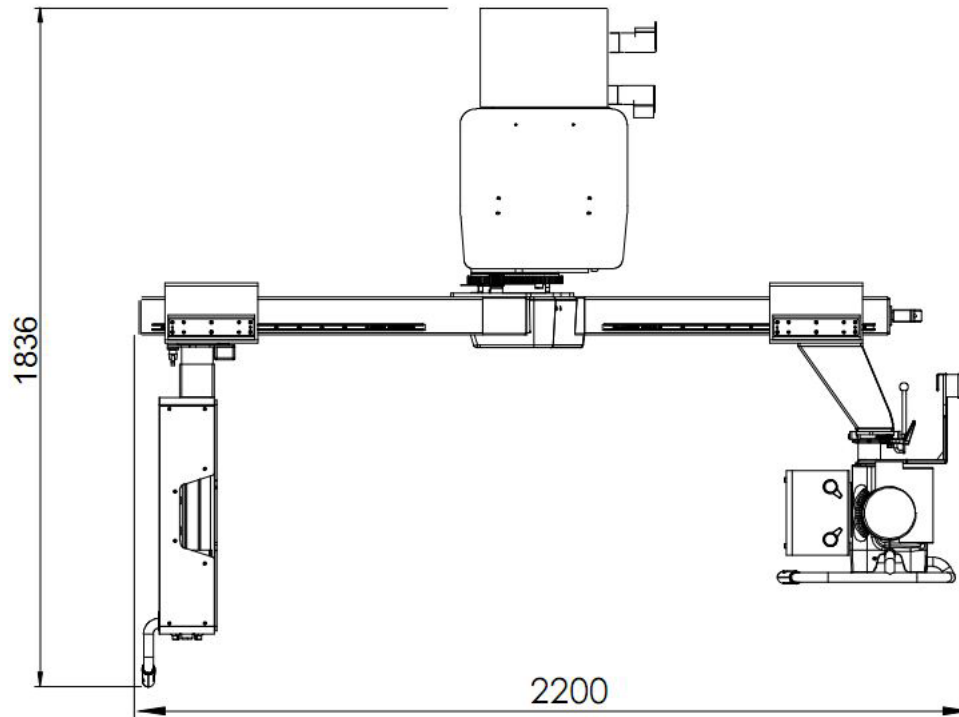


Figure 6-7 Top View

Note: Vertical position of the positioner arm is 0 degree(In 0 degree, the column and Arm are coincided, and the Tube is in the top position) and the rotation angle range of the arm shall be not less than +135 degree to -30 degree (clockwise rotation is "+")

## 2.2.6 U-Arm and Cabinet shipping Dolly



Figure 6-8 Dolly

# Chapter 7 - Room Layout

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## Section 1.0 Radiation Production

Because X-ray equipment produces radiation, you may need to take special precautions or make special site modifications. The General Electric Company does not make recommendations regarding radiation protection. It is the purchaser's responsibility to consult a radiation physicist for advisement on radiation protection in X-ray rooms.

## Section 2.0 Clinical Access

Make sure that you plan the room with the following clinical access requirements:

- Provide emergency egress path out of the room for patient, operators and service personal, per country and regional requirements.
- Provide easy access to the patient table. Stretchers and other mobile hospital equipment must reach the table quickly.
- Clinicians at the patient table must be able to communicate with assistants in the control area.
- Operators in the control area must have easy access to the Operator [Console](#). However, position the controls (including handswitches) so the operator cannot take exposures while looking around or standing outside the control booth's lead glass window.
- Consult customer on the number and location of nonelectrical lines (air, oxygen, vacuum, water, etc.) in the radiographic room.
- Provide easy access to the Wall Stand.
- Ensure there is enough space between the table and the Wall Stand to perform standing ankles, knees, etc.
- For the wallstand, ensure that the room layout is such that the tube can be centered on top of the horizontal detector.

Note: The generally accepted practice is to load the patient laterally. In case of room layout designed for longitudinal patient loading, some modifications must be brought to the table.

## Section 3.0 Peripheral Equipment

Consult hospital personnel regarding additional space requirements for the following types of hospital equipment:

- Storage Cabinet
- Sinks
- Oxygen Stations
- Monitoring Equipment
- Crash Cart

## Section 4.0

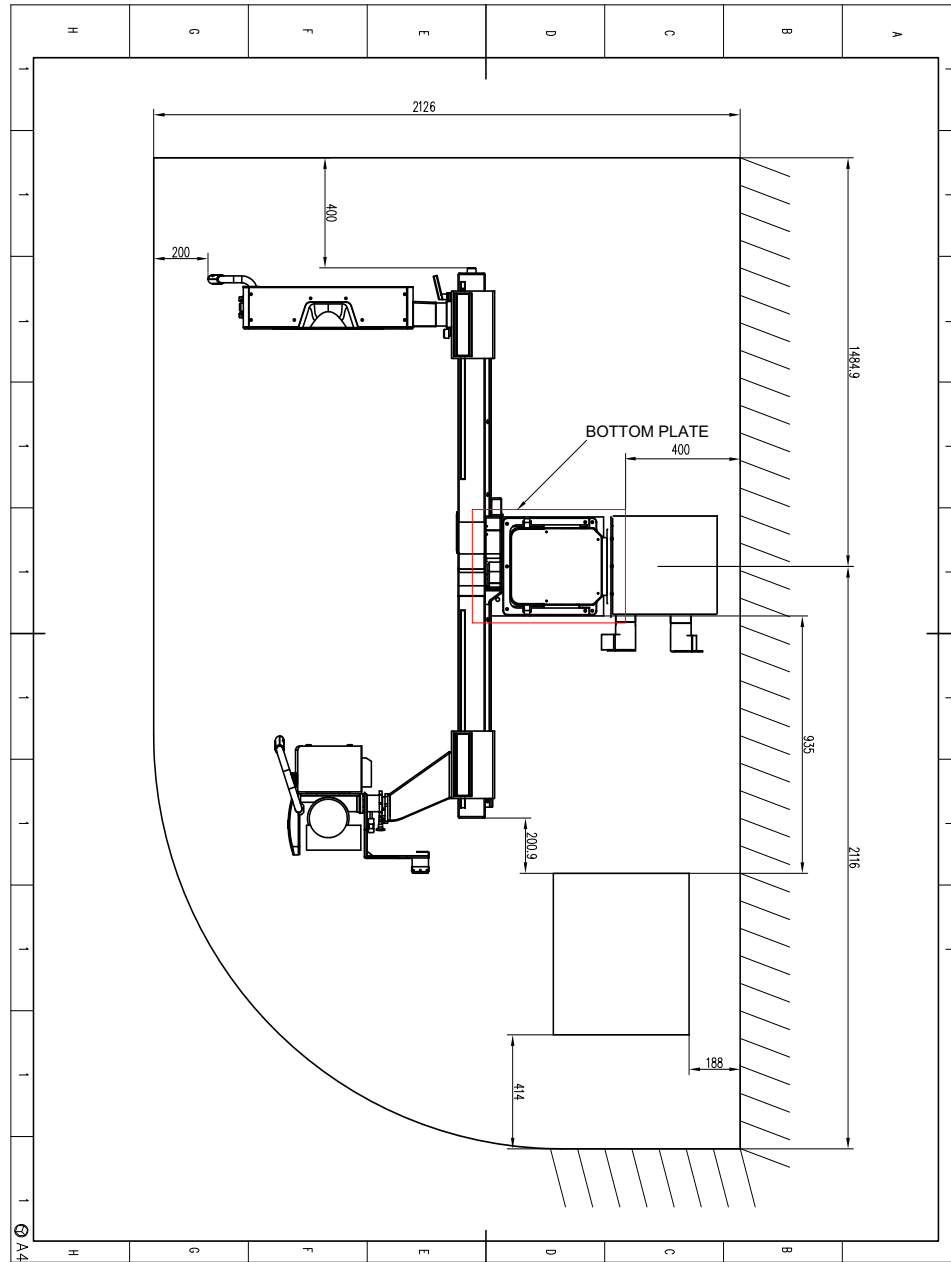
# Room Layout Drawings

See [Figure 7-1](#) for detailed service and operation area requirements.

See [Figure 7-2](#) for typical system room layouts.

See [Figure 7-3](#) for Min size room layouts.

The room layout shows the minimum room size that system needs, but customers should be required to prepare a room according with local regulatory requirement.



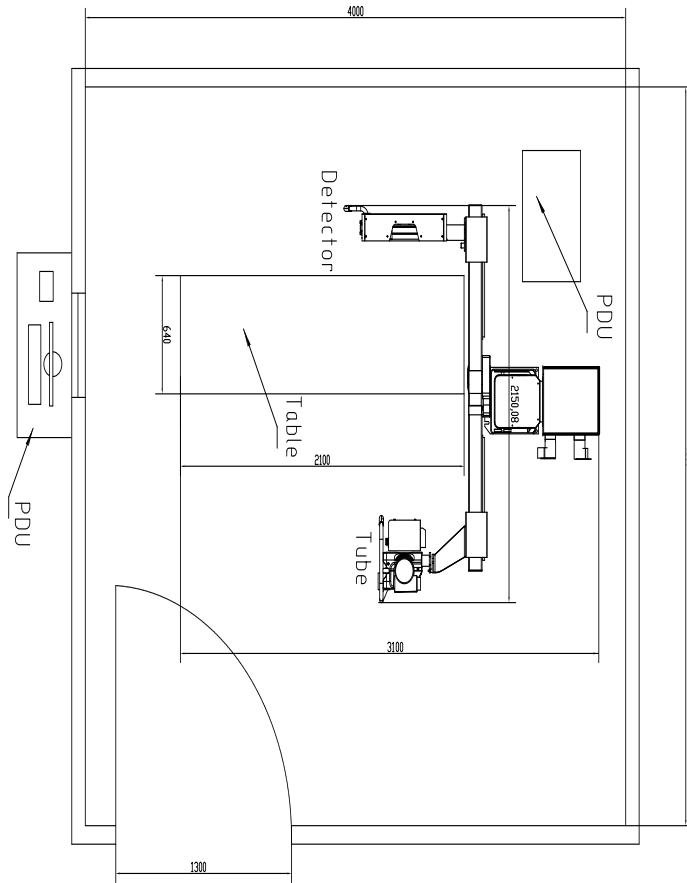


Figure 7-2 Typical Room Layout

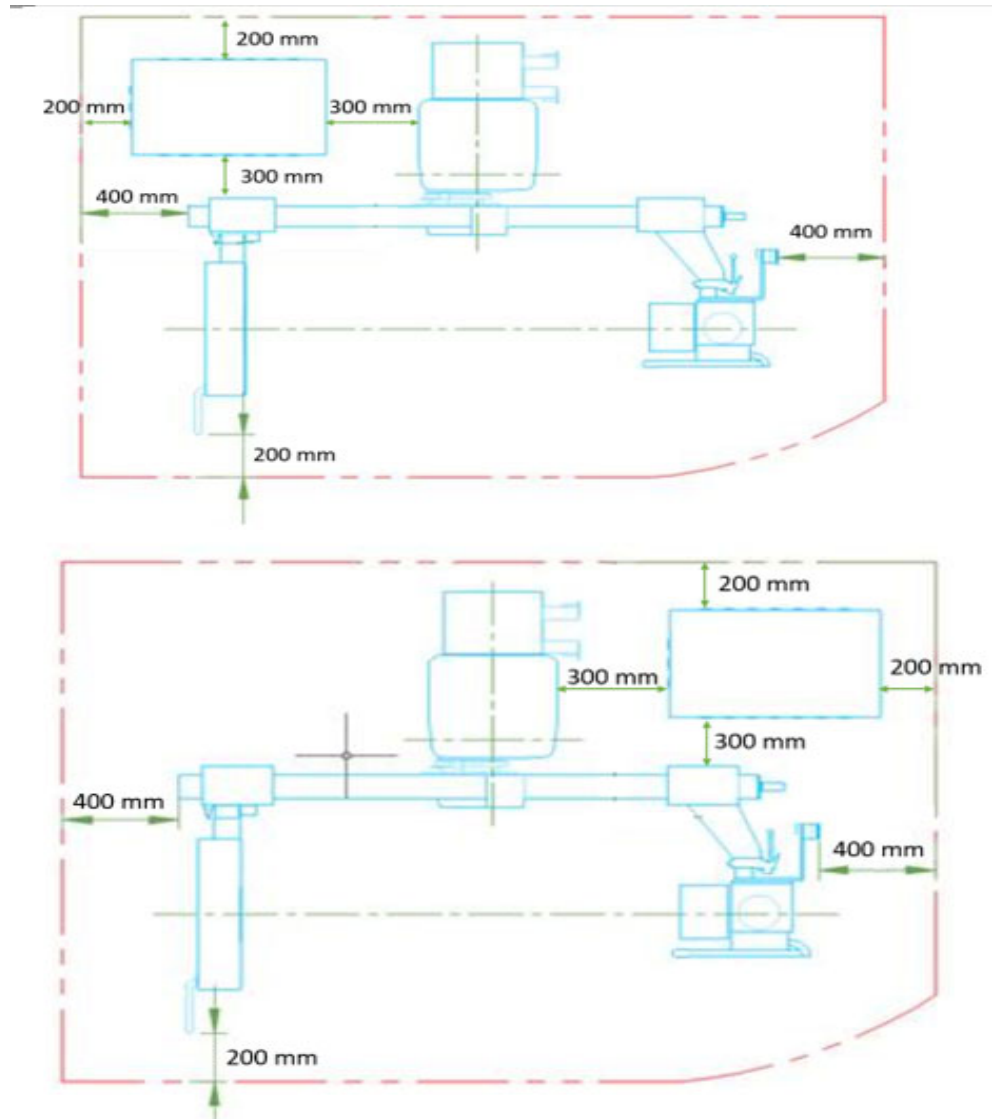


Figure 7-3 Min size room layout



# Chapter 8 - Planning Aids

## Section 1.0 Shipping Dimensions and Weights

PRODUCT OR COMPONENT	SHIPPING DATA					
	SHIPPING DIMENSIONS (APPROX.)			GROSS SHIPPING WEIGHT (approx.)	NET SHIPPING WEIGHT (approx.)	SHIPPING METHOD
	LENGTH	WIDTH	HEIGHT			
U Arm	244cm	99 cm	121cm	738 kg	583kg	box 1
Stretcher table -if applicable	212 cm	78.1 cm	45.6 cm	130 kg	65kg	box 3#
Stretcher table -if applicable	218 cm	78 cm	95 cm	132 kg	50kg	box 3#
Accessory	172 cm	135 cm	116 cm	482kg		box 2#

Table 8-1 Shipping Data

## Section 2.0

# Installation Tools and Materials Required

### 2.1 Tools and Materials Checklist

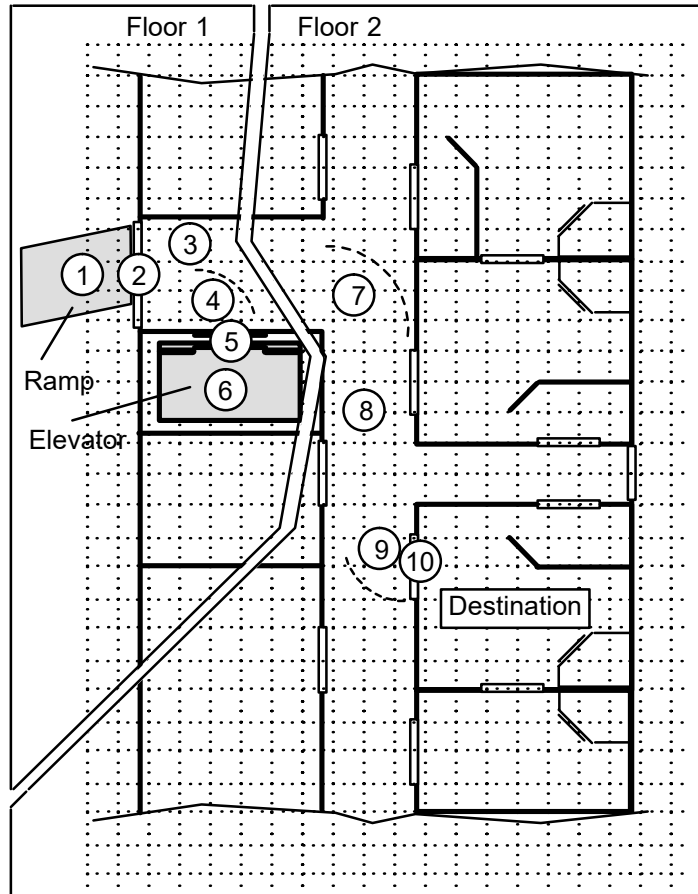
The following tools and materials are needed for installation, but are not shipped with the product:	Completed
Assorted hardware for termination of electrical connections (solder-less ring lug terminals and butt splices, AWG 2-18)	<input type="checkbox"/>
Tie wraps, electrical tape and wire markers	<input type="checkbox"/>
Tags for labelling incomplete work in accordance to OSHA and regulatory requirements	<input type="checkbox"/>
Tag and lock-out equipment	<input type="checkbox"/>
Assorted 12-point sockets (SAE and metric), drives, wrenches and torque wrench (Nm and ft.-lbs)	<input type="checkbox"/>
Electric and hammer drill. Assorted masonry and high-speed bits in both metric and SAE sizes	<input type="checkbox"/>
Assorted sizes of tongue and groove pliers, hammers, hex wrenches (metric and SAE), screw drivers and metal files	<input type="checkbox"/>
Assorted sizes of wire cutters and strippers, ratchet and standard crimpers (42,400 mm <sup>2</sup> and upwards), and a 75 watt soldering iron	<input type="checkbox"/>
Heat and electrical tape	<input type="checkbox"/>
Chalk line	<input type="checkbox"/>
Digital multimeter	<input type="checkbox"/>
4 ft. level (or two standard levels)	<input type="checkbox"/>
Dosemeter	<input type="checkbox"/>
Densitometer	<input type="checkbox"/>
Thread fixing glue	<input type="checkbox"/>

## Section 3.0 Preparing the Delivery Route

1.) Step One – Sketch out the Route

Begin preparing Route Survey by sketching the area of the hospital or clinic which will receive the equipment. Include all areas on the delivery route from outside of building to destination. See sample sketch below.

*Reference Numbers* Numbers in circles refer to the Route Survey data. The Route Survey is a form on which site data is listed (step 2).



**Figure 8-1 Sample Route**

2.) Step Two – Survey the Route

Record all loading capacities, corridor widths, door openings, turning radii, flooring materials, elevator sizes, obstructions and so on for reference.

3.) Step Three – Check the Route

Verify equipment can actually be transported via the route determined in step 1.

## Section 4.0

# Networkflow Audit

**Networkflow** (net' wurk' flo) *n* 1. The study of how to integrate diagnostic imaging devices into both your facility's network *and* workflow. -*v* 2. The act of integrating a digital diagnostic device most effectively for your particular situation. 3. Leveraging your network equipment and workflow investment for peak efficiency.

Understanding how your facility leverages its network investment through our *Networkflow* process will help us better integrate the system into your operations. The following is intended to identify the various ways the system can fit into your workflow and the ramifications of selecting one path or another. We would like to start at the beginning, with the patient arriving at your facility, going through registration/admittance/patient scheduling and proceed all the way to the read images being archived.

### 4.1 What is the *Networkflow* Audit?

This audit was designed to collect information on your network, your DICOM equipment, your workflow and your dataflow. Once this information is collected, it will be used to determine the best way the system can fit into your facility. The information will also be used to ease and speed the integration of the system into your facility.

This audit is intended to be performed before the system is quoted to you. The audit process will uncover aspects of your network and workflow that will impact how well the system will integrate into your facility. With all facts uncovered, GE can prepare a more accurate quote and minimize "surprises" at the time of install.

You should fill this out with the GE Healthcare representative. They will be able to answer any questions you may have.

## 4.2 Facility Information

Name of facility:	_____	Room #:	_____
Workflow contact:	_____	Phone:	_____
Network Infrastructure contact:	_____	Phone:	_____
DICOM Device contact:	_____	Phone:	_____
Other contact:	_____	Phone:	_____
GEHC Sales Representative:	_____		
GEHC Auditor:	_____		

## 4.3 Workflow Analysis

When the patient arrives in the system room for the exam, how is the patient data entered into the system?

- Manually typed                       Entered via barcode reader                       Downloaded from HIS/RIS  
Barcode format: \_\_\_\_\_

If the patient information was downloaded from a HIS/RIS system, how would the query be structured? *(Pick all that apply)*

- By date                       By modality                       By patient information  
 By procedure                       By product (AE Title)  
 Other method - Please explain: \_\_\_\_\_

In retrieving patient schedule information, do you query

- Once at the start of the shift       Several times during a shift                       Before each patient

What percent of images acquired are reviewed via softcopy? \_\_\_\_\_%

What percent of images acquired are printed? \_\_\_\_\_%

Once the digital diagnostic images are acquired, what is your facility's default workflow?

*(Pick one)*

- Manually send                       Automatically push

*(Pick all that apply)*

- Review station(s)                       Archive system(s)                       Printer(s)

When images are configured for automatic push, what would you like to be sent to PACS/archive/review stations?

- Raw                       Processed                       Raw and Processed

When images are printed, on what device is the print command originated? *(Pick all that apply)*

- The system                       A review workstation                       A PACS system

How soon after the images are acquired is the first image quality check done?

- Before the next image is shot     Before the patient leaves                       After patient leaves

When it comes to image quality, would you prefer to;

- Consider all images good unless marked bad  
 Consider all images bad unless marked good

## 4.4 The Physical Network

Physical infrastructures vary widely from institution to institution. GE Healthcare tried to pick the most popular networking connection to ease integration into your facility's network.

In the system room, this facility;

- Has 100baseT installed                       Has 10baseT installed                       Has a different network installed  
 Will have 100baseT installed                       Will have 10baseT installed                       We don't have a network installed

Is the network open to GE?

- Yes                       No

Do you segment your network using subnets?

- Yes                       No

Our equipment's IP addresses are:

- Static                       Acquired via DHCP                       A combination of both methods

## 4.5 System Parameters

System	
Host Name:	_____
Network (IP) Address:	____ . ____ . ____ . ____
Subnet Mask:	____ . ____ . ____ . ____
Router IP:	____ . ____ . ____ . ____
Scheduled Station AE Title:	_____

The **Host Name** is the network's name for the system.

IP addresses uniquely identify a device on a network. IP addresses are constructed of 32 bits, usually displayed as four numbers separated by a period. Please indicate the **Network (IP) Address** that will be assigned to the system.

Subnets are a method of logically dividing a network into smaller blocks. This is usually done based upon locality, functionality or security requirements. If your facility will place the system on a subnet, please list the **Subnet Mask** and **Router IP**.

The **Scheduled Station AE (Application Entity) Title** is the name your HIS/RIS system will use to send worklist information to the system.

## 4.6 Devices & Services Audit

Use the following narrative to complete the form on the previous page.

**REMOTE HOSTS:** Remote hosts are DICOM devices to which the system can push an image. Remote hosts can be review workstations, archival devices, or PACS systems. Please indicate the type of remote host.

Now indicate the manufacturer and model name or number.

Compatibility can vary with software versions, please indicate the version of device firmware/software the device will be running.

List the device's **IP address**.

The answers to the next several items can be found in the device's DCS (DICOM Conformance Statement).

Please indicate the highest level of **DICOM conformance** for this device. If the device is not DICOM compliant, please indicate so and move on to the next device.

**If the device does have some level of DICOM conformance please return a copy of the DICOM Conformance Statement with this completed form.**

DICOM supports a number of **image types**. Please indicate if this device supports the DX and/or the CR image types.

The **host name** is the name that will appear on the screen and users will use to indicate this device. Please list the host name.

The next four sections address the four services that remote host devices may offer. Each of the services will have its own AE (application entity) title and port number. The AE title is the name given to a service or application provided by a DICOM device. The port number is a logical designation within the device. These pieces of information are available in the device's DCS.

Being a **remote host server** allows the system to push images to other devices. If you want the device to accept this service, check yes and provide the AE title and port number.

Being a **query/retrieve** service class provider allows the system to query this device and retrieve images stored there. If you want this device to provide these services to the system check yes and fill in the requested items.

The **query/retrieve by** study or patient controls how much the user is able to retrieve at one time. For study, the user may retrieve studies, series, images. For patient, the user may retrieve all of the study attributes plus a patient's entire image collection.

A **storage commitment** provider confirms that images sent by the system to an archival system were received and stored. Note - This option is only available when the system is sending DX type images. If your device supports both DX image types and storage commitment check yes and provide the AE title, the port number and the network (IP) address.

The **MPPS server** receives the messages sent by the system. These messages consist of information such as when the exam started and closed, how many images were acquired, dose information, etc. This information is then updated on the Hospital Scheduling system. If the site has an MPPS server, provide the AE Title , IP address and port number.

Printers	Include a DICOM Compliance Statement for each printer	
Manufacturer/Model:	_____	_____
Software/Firmware Version:	_____	_____
Prints via Spooler:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Network (IP) Address:	____.____.____.____	____.____.____.____
DICOM Compliance Level:	<input type="checkbox"/> 1.0 <input type="checkbox"/> 2.0 <input type="checkbox"/> 3.0 <input type="checkbox"/> Not DICOM Compliant	<input type="checkbox"/> 1.0 <input type="checkbox"/> 2.0 <input type="checkbox"/> 3.0 <input type="checkbox"/> Not DICOM Compliant
Host Name:	_____	_____
Printer AE Title:	_____	_____
Port Number:	_____	_____

**Printers:** As with the remote hosts, please list the manufacturer and the model name/number. The software/firmware version should also be entered. Next, supply the IP address of the printer.

Indicate the DICOM compliance level of the printer. If it is not DICOM compatible, please indicate so.

DICOM compatibility does not guarantee all functions will work properly. **Include every unique printer's DICOM Compliance Statement.**

Supply the Host name for the printer.  
 Look in the DCS for the printer's AE title and port number.

<b>RIS Systems</b>	Include a DICOM Compliance Statement for each device	
Manufacturer/Model:	_____	_____
Software/Firmware Version:	_____	_____
Network (IP) Address:	____.____.____.____	____.____.____.____
DICOM Compliance Level:	<input type="checkbox"/> 1.0 <input type="checkbox"/> 2.0 <input type="checkbox"/> 3.0 <input type="checkbox"/> Not DICOM Compliant	<input type="checkbox"/> 1.0 <input type="checkbox"/> 2.0 <input type="checkbox"/> 3.0 <input type="checkbox"/> Not DICOM Compliant
Host Name:	_____	_____
HIS/RIS AE Title:	_____	_____
Port Number:	_____	_____
Modality used for Scheduling:	<input type="checkbox"/> DX <input type="checkbox"/> CR	<input type="checkbox"/> DX <input type="checkbox"/> CR

**RIS Systems:** As with the remote hosts please list the manufacturer and the model name/number. The software/firmware version should also be entered.

Indicate the IP address the device is using as well as the DICOM compliance level. **Please include the DCS for the RIS with this completed form.**

Fill in the Host name.

Look in the DCS for the AE title and port number.

Please indicate if this device supports the DX and/or the CR image types. This information should also be in the device's DCS.

## 4.7 Dataflow Analysis

Now that we have outlined the way your facility works and the devices you work with, we would like to define how the images flow through your network.

The system is an acquisition-only device. Because of that fact you will need to move acquired images off the system and into your work/data flow. Please use the chart below to describe your data flow. As an example, if your facility reviewed images as the first step after acquisition, the review box would be checked in the first column of the **Task** row and the review workstation would be checked in the first column of the **Device** row. You should use each of the functions once.

	1st step after acquisition	2nd step after acquisition	3rd step after acquisition
<b>Task</b>	<input type="checkbox"/> Archive <input type="checkbox"/> Print <input type="checkbox"/> Review	<input type="checkbox"/> Archive <input type="checkbox"/> Print <input type="checkbox"/> Review	<input type="checkbox"/> Archive <input type="checkbox"/> Print <input type="checkbox"/> Review
<b>Device</b>	<input type="checkbox"/> Archive device <input type="checkbox"/> PACS <input type="checkbox"/> Printer <input type="checkbox"/> Review Workstation <input type="checkbox"/> Spooler ➡ Printer(s) <input type="checkbox"/> Spooler ➡ Review Workstation(s)	<input type="checkbox"/> Archive device <input type="checkbox"/> PACS <input type="checkbox"/> Printer <input type="checkbox"/> Review Workstation <input type="checkbox"/> Spooler ➡ Printer(s) <input type="checkbox"/> Spooler ➡ Review Workstation(s)	<input type="checkbox"/> Archive device <input type="checkbox"/> PACS <input type="checkbox"/> Printer <input type="checkbox"/> Review Workstation <input type="checkbox"/> Spooler ➡ Printer(s) <input type="checkbox"/> Spooler ➡ Review Workstation(s)

**Printing:** It is important to us to understand the path your images follow before they are printed. We are now looking to answer the question of what road an image most typically travels on its way to be printed regardless if that is the first step in your process or not. Please try to find in the list below the path that best describes the path the image takes from acquisition to printing.

- System ➡ Printer
- System ➡ Spooler ➡ Printer(s)
- System ➡ Archive Device ➡ Printer
- System ➡ Archive Device ➡ Spooler ➡ Printer(s)
- System ➡ Archive Device ➡ Review Workstation ➡ Printer
- System ➡ Archive Device ➡ Review Workstation ➡ Spooler ➡ Printer
- System ➡ PACS ➡ Printer
- System ➡ PACS ➡ Spooler ➡ Printer
- System ➡ Review Workstation ➡ Printer
- System ➡ Review Workstation ➡ Spooler ➡ Printer(s)
- System Other: \_\_\_\_\_ ➡ Printer(s)

**Image Review:** Now let's trace the path from acquisition to image review. Again, pick the item below that best describes how the image flows from the system to the radiologist.

- System ➡ Printer ➡ Printed Film ➡ Radiologist
- System ➡ Review Workstation ➡ Radiologist
- System ➡ Archive Device ➡ Review Workstation ➡ Radiologist
- System ➡ PACS ➡ Radiologist
- System ➡ PACS ➡ Review Workstation ➡ Radiologist
- System ➡ Other: \_\_\_\_\_ ➡ Radiologist

**Archive:** The final part of this triad is archiving images. Pick the item below that best describes the flow of images to be archived.

- System ➡ Archive Device
- System ➡ PACS
- System ➡ Printer ➡ Printed Film ➡ Filing System
- System ➡ Review Workstation ➡ Archive Device
- System ➡ Review Workstation ➡ PACS
- System ➡ Other: \_\_\_\_\_ ➡ Archive Device

## 4.8 What Will Happen Next?

Next, your completed audit sheet will be analyzed by your GE Healthcare representative and any issues identified.

# Section 5.0 Pre-Installation Checklist

Delivery Date: \_\_\_\_\_ Sales Person: \_\_\_\_\_  
Customer: \_\_\_\_\_ FDO No.: \_\_\_\_\_ Room # \_\_\_\_\_  
Equipment: \_\_\_\_\_

### Physical Requirements of Site

### Completed

- 1.) Room size adequate for intended equipment configuration?
- 2.) Floor is strong enough for intended equipment and mounting methods approved – seismic regulatory codes considered?
- 3.) Delivery route accommodates all intended equipment?
- 4.) Radiation physicist consulted?
- 5.) Necessary alterations made to circumvent obstructions?
- 6.) Modifications to room finished?
- 7.) Supports, platforms been provided?
- 8.) Support structures installed for floor, and wall mounted equipment?
- 9.) Has floor been modified for cable ducts?
- 10.) Electrical service in place - at the ratings specified in pre-installation documentation?
- 11.) Power available to operate power tools?
- 12.) All non-electrical lines (air, water, oxygen, vacuum) installed?

### Interconnections

### Completed

- 1.) Signal cable, power and grounding plans produced?
- 2.) Necessary interconnection hardware, such as junction boxes, conduit or raceways, and fittings provided?
- 3.) Interconnection hardware installed?
- 4.) Flexible, stranded wire provided for System input power connection?
- 5.) System “feeder” power cables pulled and sufficient length available at disconnect box for connections?
- 6.) Interconnecting cables continuity checked, and labeled?
- 7.) All high voltage cable lengths verified?
- 8.) Interface information available for equipment?

**General**

**Completed**

- 1.) Walls, and floor clear of all obstructions?
- 2.) Walls finished?
- 3.) Finished floor installed?
- 4.) Room lights installed?
- 5.) Dust-creating work completed?
- 6.) Old equipment within room removed?
- 7.) Component positions clearly marked on floor?
- 8.) Space available to store equipment?
- 9.) Lock on door, or locked room available?
- 10.) Room IP Addresses for DICOM and Broadband identified?
- 11.) Have all fire/safety inspections for occupancy been completed?

Comments:

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Inspection Date(s):

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Installation Project Manager Signature

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# ***Chapter 9 - System Cable Information***

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## **Section 1.0 Introduction**

The following information is provided as an aid to make the physical installation of system cables easy and efficient. In the tables that follow, the physical characteristics of each cable and its associated connectors is provided. Thus making it easier to plan cable paths and clearances in advance. Physical characteristics are given for each available cable length. Review cable lengths carefully and choose lengths appropriate for your installation prior to the equipment arriving, to avoid unnecessary installation delays.

Remember, it is up to you to make sure that all cables are routed and connected in accordance with all regulatory laws that may apply.

## Section 2.0 Cable Information

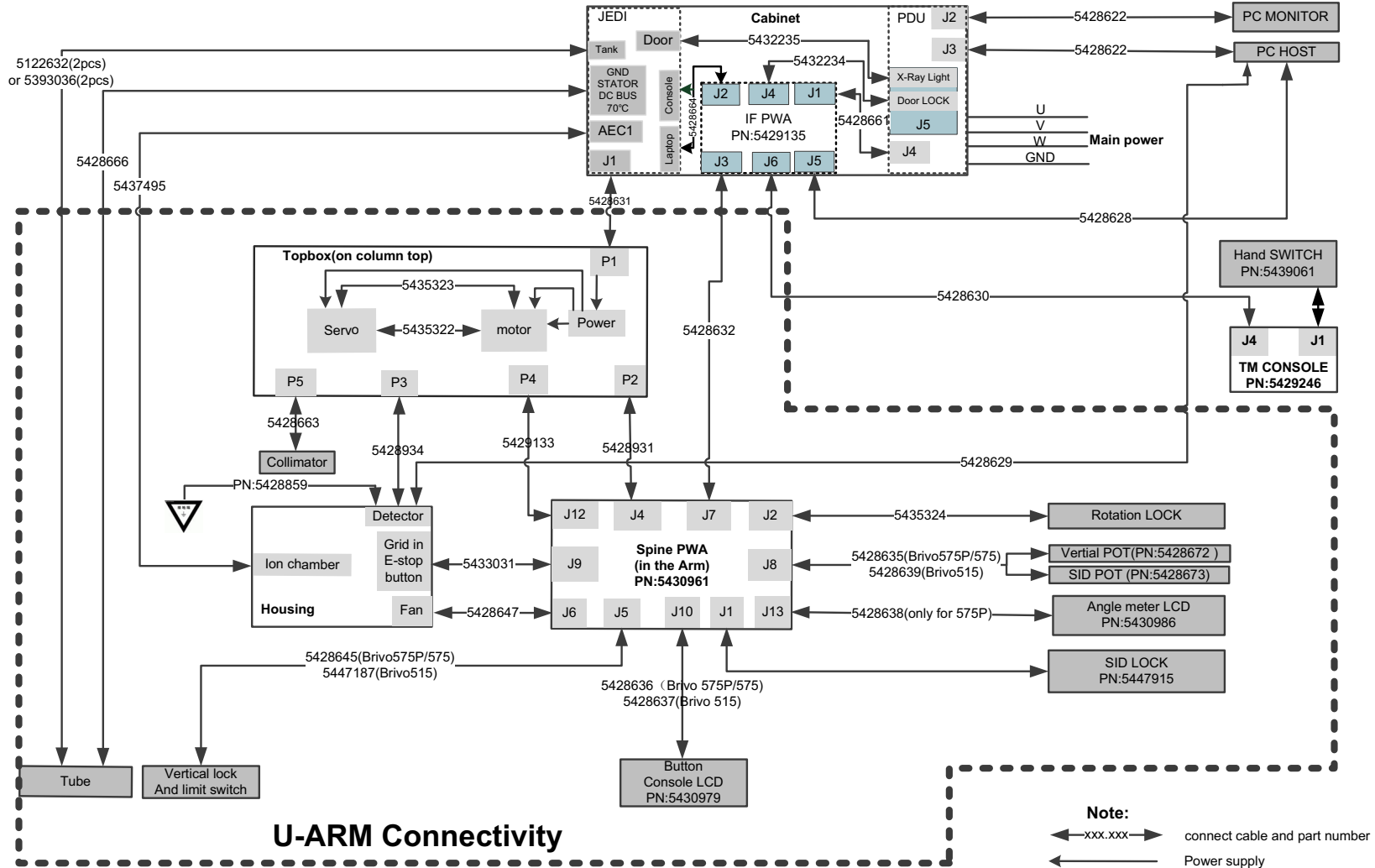
### 2.1 Cable Lengths and Characteristics

Item	Cable Number or Name	PN.	Voltage (V)	Length	Usable Length (m)	Diameter	Connector One End	Connector The Other End
1	PC power cable	5428622	220	15m	12m	8.5mm	PDU J2/J3	PC/Monitor
2	PC RS232 cable	5428628	24	15m	12m	5mm	IF J5	PC
3	IF-TM cable	5428630	5	15m	12.6m	7.1mm	IF J6	TM console J4
4	PC ethernet cable	5428629	24	28m	26m	6.8mm	Detector	PC
5	U-ARM power cable	5428631	220	10m	8.5m	6.5m	Top box	PDU J1
6	IF Spine cable	5428632	5	15m	12m	7.3m	IF J3	Spine J7
7	U-ARM main PE cable	5428665	0	8m	7m	4.65mm	Top box	U Arm
8	Spine power cable	5428931	24	6m	5.5m	7mm	Spine J4	Top box P2
9	Detector power cable	5428934	12	8m	7m	7.3mm	Top box P3	Detector
10	WanBo HV cable 12m	5393036	380	15m	12m	17mm	Main power	PDU TM1

Route the cables from U-Arm, put the cables on the topbox cable support, and down to PDU.

	U-Arm to PDU	U-Arm to workstation	PDU to workstation
cable whole length	8.3m	25.8m	12m
available cable length	5m	12m	10m

# Section 3.0 - System Master Interconnect Schematic (MIS)





# Appendix A - Revision History

Revision	Date	Reason for change
1	2015/01/26	First Release
2	2016/11/07	Correct the shipping dimensions Add the generator heat output
3	2016/12/29	Add New PC Z440 workstation Part number.
4	2019/11/06	Update table, monitor image, weight, drawing for VCP tasks
5	2020/04/20	Update Important Precautions for Language. Update Recommended Power Supply, Recommended Wall "Circuit-Breaker" Ratings
6	2022/02/28	Add Min size room layout drawing figure 7-3 in Chapter 7 Section 4.0. Add Ceiling Height content in Chapter 3 section2.0. Change table 5-5 link to table 5-2.







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